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L.M.S.R. Derby Staff College Scheme

SIR JOSIAH STAMP, G.C.B., G.B.E., Chairman and President of the Executive of the London Midland & Scottish Railway, addressing a gathering of press representatives at Euston yesterday, announced that his company is to establish at Derby the first railway staff college in Great Britain. The college will be residential and will accommodate fifty members of the staff selected from all grades; the period of training will be anything from a fortnight upwards. The object of this special training is to broadcast all the best ideas known to railwaymen, and to provide the equivalent of text books in engineering and other sciences for all non-engineering branches of railway working and administration. To avoid too many lectures, selected practical men will give talks, reinforced by cinema and lantern illustration, and there will be a regular exchange of ideas within and without the college. This new training will not cut across existing technical or other educational facilities, and the practice of combining work and play in this residential college, for which it will be specially adapted, is expected to break down departmental, grade and other barriers. At present a man's success is often due to his chance training under a first class man, and the college is intended to eliminate the element of chance and secure for all promising candidates an equal opportunity for sound training and not lose through retirement the valuable experience of senior men. The Principal of the college will be experienced in organising technical instruction and the Vice-Principal will probably be a carefully selected district officer. A fine new building has been designed by Mr. W. H. Hamlyn, Architect to the L.M.S.R. Sir Josiah in a brief speech pointed out the necessity for widely disseminating ideas to so scattered a staff as that of the L.M.S.R. system, which had a pay roll of over £250,000. He also said that the best men would be spared periodically to teach others at the college, and refresher courses would probably be a feature of the scheme. Messrs. E. J. H. Lemon and W. V. Wood, Vice-Presidents, also spoke and answered various questions put to them.

* * * *

Sir Henry Burt

In our personal columns this week we have to record the death of one of the most experienced and efficient administrators that have ever guided the destinies of Indian railways, Sir Henry P. Burt, K.C.I.E., C.B.E. His career, solidly founded upon a sound theoretical engineering training at Cooper's Hill and practical experience upon the old London & North Western Railway, was one of continued success under the Government of India, and culminated in a tenure of the chief executive office upon all the (then) three State railways successively. Promotion to membership of the Railway Board followed and finally, in so far as his service in India was concerned, to the Presidency of that body. Not only had Sir Henry engineering and administrative experience on several railways, but he was also in the administrative grade of the Traffic Department, and served in a secretarial capacity under the Government of India; he was latterly also a Member of the Viceroy and Governor General's Council. On his retirement from India in 1915, he was immediately selected by the Secretary of State for India to represent him as Government Director upon the boards of the Indian company-worked lines. His sound judgment and advice in this capacity backed by an unparalleled width of Indian railway experience, brought Sir Henry the chairmanship of four and directorship of another of these companies' lines after his final retirement from Government service in 1919, and at the time of his death he was still Chairman of two and a director of a third.

* * * *

The Week's Traffics

Comparison with a week in 1935 when coal traffics were exceptionally heavy in view of the fear of a coal strike in South Wales accounts for the smaller coal earnings of the four group railways for the past week and for the relatively moderate total increase of £88,000. For the previous week the total increase was £97,000. The four companies together show an aggregate total for the 44 weeks of this year of £132,544,000, being an increase of £4,316,000, or 3·37 per cent. Passenger train receipts for the past week again provide the largest gains, which for the year to date show increases of £540,000, or 2·49 per cent. on the L.M.S.R., of £300,000, or 2·12 per cent., on the L.N.E.R., of £167,000, or 1·81 per cent., on the Great Western, and of £258,000, or 1·91 per cent., on the Southern. The L.M.S.R. increase in merchandise earnings to date is £1,175,000, or 5·93 per cent.

	44th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	
	£	£	£	£	£	%
L.M.S.R. ..	+ 31,000	+ 23,000	− 13,000	+ 41,000	+ 2,138,000	+ 4·15
L.N.E.R. ..	+ 14,000	+ 3,000	+ 3,000	+ 20,000	+ 1,247,000	+ 3·31
G.W.R. ..	+ 10,000	+ 9,000	− 13,000	+ 6,000	+ 575,000	+ 2·67
S.R.	+ 16,000	+ 5,500	− 500	+ 21,000	+ 356,000	+ 2·03

London Transport receipts for the 18 weeks of the financial year amount to £10,075,000, an increase of £296,700.

* * * *

Central Uruguay Railway

In currency receipts this company secured during the year ended June 30, 1936, an increase of 4 per cent., and working expenses were only 0·75 per cent. higher.

Revenue in sterling was, however, 16 per cent. lower, and expenditure was reduced by 17 per cent., leaving net receipts £10,009 lower at £67,793. This decline in sterling is due to the substitution as from November 1, 1934, of the free controlled rate for the official rate. Exchange itself actually improved during the year. A revised goods tariff came into operation on July 4 last, and the results so far appear promising. In the accompanying table the figures refer to the combined system of 980 miles, which includes the Northern, Eastern, and Western Extensions worked by the parent company:—

	1935–36	1934–35
Passengers	4,416,580	4,178,285
Public goods, tons	946,393	833,641
Average haul (goods and livestock)	136·55 miles	135·40 miles
Train-miles	2,640,073	2,553,093
Operating ratio, per cent.	80·42	83·23
	£	£
Passenger receipts	147,292	156,265
Goods receipts	406,022	423,385
Gross receipts	823,366	892,876
Expenditure	662,161	743,112
Net receipts	161,205	149,764

The board has under close study a scheme of reorganisation of the parent company and its allied undertakings and a reconstruction of capital which it is hoped to present in the early part of next year.

* * * *

Overseas Railway Traffics

A fortnight ago the slowing down of the rate of decrease in Buenos Ayres Great Southern Railway traffics was noted, and it is satisfactory to see an increase in the latest return. Central Argentine traffics continue their advance and in the past two weeks £52,700 has been added to its previous increase. During the same period the Buenos Ayres Western has converted a loss of £4,183 into a gain of £15,081, and the Entre Rios has added £6,154 to its previous increase. Brazilian railways are now on the right side both in sterling and currency.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific	18th	80,706	+ 1,388	1,339,046	+ 14,445
Buenos Ayres Great Southern	18th	122,059	+ 4,961	1,971,255	− 177,648
Buenos Ayres Western	18th	48,706	+ 12,396	715,6 3	+ 15,081
Central Argentine	18th	142,851	+ 30,504	2,464,748	+ 314,017
Canadian Pacific	44th	930,800	+ 66,000	22,838,600	+1,590,800
Bombay, Baroda & Central India	29th	205,050	− 27,300	4,463,175	+ 185,700

For the first nine months of the current year the Canadian Pacific shows an increase of £1,580,600 in gross earnings and of £88,200 in net earnings.

* * * *

Uncommercial Travellers

Users of the railway whose payments in rates and fares make no adequate contribution to the maintenance of the service they enjoy, can hardly be looked upon as a commercial proposition. It is with competition from transport provided on these apparently philanthropic principles that the Buenos Ayres Western Railway is faced, the offenders being the metre-gauge lines operated by the Buenos Aires Provincial Government. But as Sir Follett Holt, Chairman of the Western company pointed out to shareholders on Wednesday (see page 769), the heavy loss at which the Government lines work means that the taxpayers throughout the province are dispensing largesse to the small section of taxpayers who happen to use them. With a suitable revision of rates, he said, it should not be impossible for these lines to pay their way without their competition being felt as it is at present. A new Governor of the Province is now tackling the problem boldly, and is seeking powers either to hand the provincial lines over to the nation, or to arrange for them to be worked by the private railways. The Buenos Ayres Western would be willing to assist in the latter scheme if it would relieve the present unsatisfactory position.

* * * *

Cordoba Central Railway

Poor wheat, maize, and linseed crops were primarily the cause of the fall of £6,840 in the gross receipts of this company for the year ended June 30, 1936, as these traffics brought in respectively £50,960, £12,555, and £13,057 less than in the previous year. Passenger receipts, on the other hand, improved by 4·54 per cent., sugar cane receipts by 52 per cent., wine receipts by 36 per cent., and stone traffic receipts by 76 per cent. Net receipts were lower by £6,711, but the losses on exchange have been reduced from £196,641 to £148,824 mainly because of the agreement with the Government under which the companies were granted a special rate of exchange, equivalent to 5 per cent. above the official purchasing rate, in respect of remittances up to a certain amount made during the calendar year, 1936. Augmented passenger services and excursion trains have been successful in counteracting road competition. Traffic prospects for the current year are encouraging.

	1935–36	1934–35
Passengers	3,720,328	3,659,099
Passenger receipts	£290,584	£277,965
Goods, tons	2,158,871	1,996,222
Goods receipts	£1,749,051	£1,763,085
Gross traffic receipts	£2,192,458	£2,199,298
Working expenses	£1,935,902	£1,936,031
Net receipts	£256,556	£263,267

The operating ratio has risen slightly, from 88·03 per cent. to 88·30 per cent. Holders of first debenture stock have agreed to the postponement, if necessary, of interest payments due betweeen October 1, 1936, and April 1, 1939.

* * * *

Art in Railway Carriages

While all other forms of publicity matter have passed through a stage of healthy development in recent years, railway carriage views have tended to retain their conventionalised form. This was all the more anomalous as other features of interior decoration were modernised and improved. The L.N.E.R. is, therefore, making an important and welcome departure in decorating new carriages for a number of important expresses with original coloured etchings, framed in Bakelite coloured to harmonise with the scheme of the compartments. Two of these etchings, by Mr. Cyril H. Barraud, we review on page 765. Altogether, Mr. Barraud has done eight views, and eight more are the work of Mr. Frank H. Mason, R.A. The innovation comes at an opportune moment, for whereas in the past many passengers regarded railway carriage views with lack-lustre eyes, foreseeing no opportunity of visiting the scenes depicted, such pictures are now subjected to a far more interested scrutiny, since so many famous and beautiful spots are today accessible to all at almost any week-end by cheap, fast, and comfortable excursions.

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A Doubtful Signal and a Blunder

On page 767 will be found a summary of Colonel A. C. Trench's report on the accident at Stourbridge, G.W.R., on July 17. It originated with a loop entrance signal which was in a doubtful position and, owing to the design of spectacle plate employed, showing no light. The driver of a goods train, for whom it was really intended to be lowered, suspected something amiss with the point or signal gear. He rightly acted in accordance with the rule that a signal in a doubtful position must be regarded as being "on" and stopped his train, sending the fireman to the box to make enquiries. Of course the train should have been fully protected, but, although it was outside

his windows, the signalman overlooked it, declaring later that he mistook a red light in a siding for its tail light, accepted an auto train in error and a collision followed. The working of signals by our standard single-wire system is easily subject to variation, the manner of pulling the lever often exercising an appreciable influence on the amount of movement imparted to the arm, while temperature changes also affect it. Unfortunately certain signalmen—we are not saying it of this one—accept this complacently and make little effort to see that good indications are being displayed. During the warm weather not long ago a distant signal which we see every day never moved more than 20 degrees from the horizontal position, proving that the signalman was not heeding the indication of the repeater or bothering himself in the least to adjust the wire. This indifference of some signalmen to an important part of their duty is unfair to their fellow workers on the footplate and, as this accident shows, may even lead to dangerous consequences.

* * * *

Railway Safety

Mr. George Mills, Divisional General Manager, Scotland, L.N.E.R., in his address to the Scottish Section of the Institute of Transport, which we summarise on another page, performed a useful service by clearing the slogan " safety first " of ambiguity. As he explained, it does not express a mere craven desire to avoid danger, but denotes an attitude to life compatible with the taking of risks—an essential condition precedent to all action. In surveying briefly the various phases of railway safety and its development, Mr. Mills brought out the essential principles underlying the innumerable security devices which have led up to the present railway tradition, sometimes aptly expressed by the phrase that the safest place in the world is a railway train. The increasing availability of electric power will probably turn out to be the governing factor of future modern railway signalling development. Fundamentally signalling principles are now well established, but the use of power enables them to be brought to a state of perfection, with a minimum of human labour, which otherwise would be impossible.

* * * *

L.M.S.R. Mobile Instructional Cinema

On Monday last a travelling cinema theatre—the first of its kind in this country—began an eight-months tour of 68 L.M.S.R. stations and depots, during which some 572 showings of instructional films will be made to small groups of members of the company's staff. The theatre, consisting of a converted sleeping car, has a seating capacity of 52. The sound film installation includes both a full-sized (35 mm.) and a 16 mm. projector, and power is supplied by a diesel-driven generating set. The films, which have been specially prepared by the railway company's Publicity Department, are cleverly conceived, their purpose being, as Sir Josiah Stamp pointed out to a press gathering, to instruct without arousing any feeling of resistance in the minds of the audience. The rather formal instructions given in the ordinary way by a foreman or senior officer are often received with diffidence, whereas the atmosphere created by a talkie is one of acquiescence. Moreover, as Sir Josiah further stressed, the film tends to instil a feeling of expectation which is, of course, the ideal mood in which to catch those to whom it is desired to introduce a new idea. The L.M.S.R. films, which are planned on the assumption that the screen can teach its lesson most effectively by showing the railwayman the comparison in results between his doing his particular job in the right and the wrong way, fulfil their function admirably. The L.M.S.R., which can now claim to be a pioneer in the use of films for both commercial and instructional purposes, has introduced this mobile cinema particularly to meet the needs of small isolated groups of employees who in the ordinary way have to depend very largely upon hearsay for their knowledge of developments taking place on other parts of the system. (See illustration on page 760.)

* * * *

The Life of Rails

In determining the life of a railway rail, attention is often concentrated on the amount of metal worn off the head by the abrasive action of the wheels as being the only factor exercising a decisive influence. This, however, is far from being the case. In tunnels there is the corrosion factor—a product of damp conditions and the sulphur which forms a part of locomotive exhaust—which affects the web and foot of the rail, and may so weaken it as to compel removal before head wear alone does so; and also the difficulty of proper attention to rail-joints, which may result in fractures of rail-ends owing to fatigue conditions. There is also the serious indentation of the rail foot over the chairs, known as chair galling, to be taken into account; it is possible for the notching of the foot so caused to start a crack in the steel which gradually travels upwards and ultimately causes failure. For this reason the laying of rails of the 100 lb. bull head section, which is once again coming into extensive use in Great Britain, and which is identical with the 95 lb. section but for the addition of $\frac{1}{16}$-in. of metal to the top of the railhead, in order to allow increased wearing capacity, should be confined to locations where it is reasonably certain that head wear is the principal factor in determining life. In tunnels where corrosion is severe, the extra cost of the heavier rail may prove to be money thrown away. Indeed, it is a moot point whether the time has not now arrived, with the constantly increasing loads and speeds of today, for the design of an entirely new rail, both heavier and deeper than any previously used, and with a greater bearing area across the foot, to cope with these modern conditions.

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Welding Locomotive Frames

An abstract of a report which was made available at the Oxy-Acetylene Conference described on pages 674 and 675 of THE RAILWAY GAZETTE dated October 23, 1936, emphasises the necessity of allowing for sufficient expansion before welding is started, as otherwise the frame might become shortened and difficulty would therefore be experienced in lining up the running gear, whilst stresses might be set up in the repaired frame which would lead to subsequent breakage. For welds in either forged, cast or rolled steel frames, a special high tensile strength steel welding rod was recommended. In certain cases, however, the weld is made with a high quality bronze rod, and excellent results have been secured from welds made in accordance with this method. As a general rule welds on locomotives in the shop for general repairs, with the engine off the wheels and the frames stripped in connection with other repairs, are made with steel rods, the bronze being used mainly in running sheds where time or facilities do not permit of the wheels being dropped or the removal of other parts. In such an event the bronze weld can be used to advantage, because less expansion of the frame is required owing to the fact that less heat is needed to make the joint, whilst as intimated the time occupied is shorter than with steel welding. The bronze welding rod now used produces weld metal having a tensile strength of about 55,000 to 60,000 lb. per sq. in., which is usually found to be adequate for work of this character.

XUM

Agreed Charges

ON October 20 the Railway Rates Tribunal began the task of hearing 145 applications for the approval of agreed charges which had been lodged at various dates between June 8 and September 1. Of these 75 were new applications, 57 were renewals of agreed charges previously authorised by the tribunal, eight were agreements with curers relating to the conveyance of live pigs, and the balance were modifications of charges previously sanctioned. The hearing of these applications occupied several days, and during the proceedings two matters of some importance arose. The first of these concerned the protection which the railway companies were desirous of giving to the Coastwise Conference shipping lines, with which they do not wish to compete. Hitherto, when a trader has forwarded his traffic by rail and/or road and coastwise steamer, the agreed charge has been calculated on the basis of the rail and/or road carryings only, and the agreement has included a condition excluding from the charge that traffic which is normally conveyed by coastwise steamer. Owing to certain difficulties arising in connection with the interpretation of this clause, however, the companies sought to enlarge it in the case of Ackland & Pratten Limited, by adding the words " which traffic the trader will continue to forward by that means of transport subject to a continuance of the existing facilities." The purpose of this alteration was to make clear to the trader when he signed the agreement what the companies have always regarded as being the position, namely, that so long as the facilities exists which the trader was enjoying prior to the introduction of the agreed charge, the traffic in question would continue to pass by coastwise steamer, and the companies did not desire to divert it to railway.

The tribunal expressed some doubt, however, as to whether the condition formerly applicable to coastwise shipping traffic which, incidentally, had already been approved in a very large number of cases, really gave effect to the intention of the companies, as the court had not realised previously that the railway companies were liable to be called upon to carry such excluded traffic at the agreed charge if it were subsequently handed to them for conveyance by railway. They also considered that the addition now proposed by the companies was open to misconception, as the companies intended the word " facilities " to cover services and charges. After a somewhat lengthy discussion they approved this particular case for a period of six months only instead of twelve, in order to afford the parties an opportunity of considering whether the condition required clarifying and, if so, of presenting another application for approval in due course. A number of other cases in which it was desired to exempt from the proposed agreed charge traffic sent by coastwise services were also in the list for hearing and, when dealing with the first of these, the tribunal explained that it was anxious not to cause the inconvenience, trouble and expense which would result from any general limitation of its approval to a shorter period. It proposed, therefore, that if upon hearing an application the charge was found to be one which it would otherwise approve, it would give its sanction and leave unaltered the coastal shipping clause as presented by the railway companies, pending a clarification of the position in the case of Ackland & Pratten Limited.

The other point of interest arose during the hearing of the application for an agreed charge by the British Gas & Torch Co. Ltd. Representations were then made on behalf of the railway companies that they were under a material disadvantage in supplying the tribunal with full particulars of the charges in respect of the rail and road carryings which have to be obtained as an essential preliminary to the calculation of the agreed charge. These details are printed in the proceedings and could be, and, in fact, had been, utilised by traders and road hauliers to the disadvantage of the railways in various directions. Accordingly it was intimated that in future the companies proposed to satisfy the court on the two main issues applicable to each agreed charge, viz., that, having regard to all the circumstances the object could not be adequately secured by the grant of exceptional rates; and also as to the probable effect which making the charge would have on the net revenue, leaving the tribunal to raise any other considerations which it felt to be essential. This procedure was subsequently followed, but brief details were given showing the average charges for conveyance by rail and road respectively during the test period, and also the proportion carried by road, in order to indicate how the combined average charge was reached. A steadily growing volume of traffic is being carried at agreed charges, of which about 350 are now in operation.

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New L.N.E.R. High-Speed Trains

CONFIRMATION of the practical success of the Silver Jubilee high-speed train has been given by the announcement of additional similar trains to be introduced by the L.N.E.R. next year between London and Edinburgh, and London and the West Riding. Edinburgh is to be brought within 6 hours, and Leeds within 2¾ hours of King's Cross, accelerations of 75 minutes and 25 minutes respectively. These new daily mileages of 371½ at 67·5 m.p.h. (the Leeds service), and 785½ at 65·5 m.p.h. (the Edinburgh service, which is to be named the Coronation), added to the 537 miles at 67·1 m.p.h. of the Silver Jubilee, will, unless any corresponding trains appear on other lines, place the L.N.E.R. far ahead of any other British company so far as high-speed mileage is concerned. The facts that the Silver Jubilee has been consistently loaded practically to capacity since its inauguration, and that its financial results have come up to the most sanguine expectations, seem to indicate clearly that trains of this sort are appreciated by the public. That they create new traffic is further borne out by experience in the U.S.A., particularly on the high-speed services between Chicago and the Twin Cities, of which we have quoted remarkable figures from time to time. Exactly at what times such new trains should be run is bound to be a matter of some speculation; facts and figures in the possession of the railways concerned must influence the decision, but, being based mainly on past experience, should not be allowed preponderating weight in assessing possibilities of quite new conditions. The German arrangement of providing high-speed early morning trains from the chief provincial centres, reaching the capital about midday and returning thence in the evening, seems to have met with almost universal approval. Business men are thus enabled to spend a clear afternoon in the capital and yet to get home the same day.

The L.N.E.R. announcement of the West Riding high-speed train indicates that the Silver Jubilee arrangements are to be followed, namely, a departure in the up direction sufficiently late to give people time to transact business before leaving, spend a full afternoon in London, and reach home the same day. Where distances permit of this arrangement it seems to be ideal, but in the case of Edinburgh the departure would have to be too early for the transaction of business beforehand. That, however, seems unavoidable, and the important thing is to give a return departure late enough in the afternoon to allow of a reason-

able time for business in London. A departure at 4 o'clock from King's Cross would get the traveller to Edinburgh by 10, but the Aberdonian would have to take a taxi on arrival at his destination shortly after midnight, and this might be regarded as a disadvantage. We hope, however, that undue weight will not be given to the Aberdeen myth in this connection. A possible solution might eventually be found by running the return train to Scotland early in the afternoon from King's Cross, and providing a second and later connection for Edinburgh, giving an arrival before midnight, by changing from the Silver Jubilee at Newcastle; such a connection might be provided by a high speed through service from Lancashire and Yorkshire. Experience to date gives no evidence that the provision of such new facilities would rob existing services, for example the sleeping car trains to Scotland, of their present patronage. Trains which satisfy a public requirement hitherto unprovided for have been proved to create a traffic of their own. The L.N.E.R. by its pioneering policy with high-speed trains deserves to reap a rich reward, and in any case has thus stimulated the public imagination and drawn attention to the fact that so far from any other mode of transport superseding the railways, their future is more firmly established than ever.

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Central Argentine Railway

ADVERSE climatic conditions so influenced the wheat, linseed, and maize carryings during the year ended June 30, 1936—and also those of rye, potatoes, &c.—as to reduce this company's income from agricultural and milling industry produce by no less than £386,939. Commercial activity was, however, fairly maintained and the agricultural industry was somewhat recompensed by higher grain prices, so that the demand for transport remained steady. As a consequence, this fall of £386,939 was narrowed to £343,855, which figure was again reduced to the final decrease in gross earnings of £251,422, or 2·5 per cent., by reason of the greater collections from the Government. Gross receipts amounted to £9,613,738. In the working expenses of £7,206,291 there was an increase of £47,845, or 0·7 per cent., leaving a balance £229,267 lower, at £2,407,447. The sum of £1,021,079 (against £1,228,623) was required to meet exchange differences, and the net receipts were accordingly reduced to £1,386,368. To these net receipts are added £34,816 income from investments, and payments of £1,307,322 for debenture stock interest, &c., are covered, leaving a balance on net revenue account of £113,862. With the aid of the balance of £673,747 brought forward from the previous year the directors propose to pay a dividend of 3½ per cent. on the 4½ per cent. preference stock for the year, which requires £339,350, and to carry forward £448,259.

In passenger traffic the advance in numbers was confined to the Buenos Aires suburban service, and there was a net decrease of £30,170, or 1·3 per cent. in passenger revenue. In the previous year passenger travel benefited considerably from the Eucharistic Congress. Of the total fall of £42,592 in main line passenger income, £38,946 was the result of diminished single ticket movement. There was, however, a compensating expansion in excursion business, which now bids fair to become the chief source of passenger revenue. Over a section of the Rosario outer urban district—an area of intense motor transport activity—a specially adapted one-class service at fares slightly below the existing second class level was experimentally introduced at the end of the year. Goods traffic tonnage decreased 0·9 per cent., and receipts 5·1 per cent. The greater ratio of decrease in receipts was caused principally by the large fluctuations in wheat and maize—traffics commanding different rates, the rebates in maize tariffs agreed upon with the Government, and competitive scaling down of charges. General merchandise was better in volume, but produced less in receipts owing to reduced charges to meet road competition. Goods train mileage was only 1 per cent. higher, as against an increase of 5·8 per cent. in the ton-mileage—producing a better average paying load. Some operating results are compared in the accompanying table.

	1935–36	1934–35
Average miles open	3,700	3,700
Number of passengers ..	44,065,280	43,065,481
Passenger receipts	£2,302,996	£2,338,936
Public goods traffic (tons) ..	7,411,439	7,481,657
,, ,, ,, (receipts)	£5,802,944	£6,117,908
Average receipts per ton of goods	15s. 8d.	16s. 4¼d.
Public traffic train-miles ..	13,273,224	12,951,214
Net profit per train-mile ..	3s. 7¼d.	4s. 2¼d.
Net profit per mile of line ..	£650 13s. 2¾d.	£731 10s. 10¾d.
Operating ratio, per cent. ..	74·96	72·56

Expenditure was chiefly influenced by factors extraneous to the effective upkeep and operation of the line. There was an economy of some £16,000 in track labour charges, largely the outcome of a fall in the number of platelayers employed owing to the extended use of motor gang trolleys. In the previous year an economy of £65,877 was realised by wage cuts, but as a result of the Government decree there was an increase in the wage bill during the year under review of £29,604.

The directors refer with deep regret to the death on May 30 last, of Mr. Felix Fighiera, Secretary of the company since January, 1906. During this period he rendered invaluable services to the company. Reference is also made to the appointment as London Manager and Secretary as from October 1, 1936, of Mr. Ronald Leslie, who has spent twenty-two years in the service of the company in Argentina, the last ten as General Manager. He has been succeeded in the Argentine by Mr. Donald M. MacRae, General Manager of the Cordoba Central Railway .

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The Irish International Main Line

NO fewer than three railway companies were concerned in the construction of the main line between Dublin and Belfast, which forms the subject of an illustrated article on pages 752 to 758, and two of them were formed exactly a century ago. The oldest by a few months was the Ulster Railway, composed mainly of Belfast business men, and incorporated on May 19, 1836, for a line from Belfast to Armagh. Originally the unusual gauge of 6 ft. 2 in. was adopted, and it was on this gauge that the line was opened, from Belfast to Lisburn on August 12, 1839, thence to Portadown on October 25, 1841. These sections now form part of the main line. It will be recalled that the Drummond Commission on Railway Communication in Ireland, of 1836, recommended the standardisation of the 6 ft. 2 in. gauge, but 5 ft. 3 in., now the Irish standard, was ultimately adopted. The gauge of the Ulster Railway was altered to 5 ft. 3 in. in 1849, and in compensation for the cost of conversion the company was awarded £13,742 leviable on certain adjoining railways that benefitted by the change and the consequent possibility of through running.

At the other end of the main line, the work was undertaken by the Dublin & Drogheda Railway, incorporated on August 13, 1836, to make a line between the points indicated by its title, together with a branch to Howth. The whole 31¾ miles of the main line was opened on the 5 ft. 3 in. gauge on May 26, 1844. In the following

year, Parliament sanctioned the connecting link between Drogheda and the Ulster system at Portadown by incorporating (on July 21, 1845) the Dublin & Belfast Junction Railway. The latter opened the 22 miles between Drogheda and Dundalk on February 15, 1849, and a 10½-mile extension from Dundalk to the Wellington Inn, near Newry, on July 31, 1850. The continuation to Portadown was completed and opened on June 3, 1852, and this established rail connection between Dublin and Belfast, with the exception of the Boyne viaduct at Drogheda. A timber trestle, forming part of the staging on which the viaduct over the river Boyne was built, was opened on May 12, 1853, and did duty for two years until the permanent viaduct was completed.

The Boyne viaduct, about 1,760 ft. in length, was a very remarkable structure, for, in addition to 15 semi-circular masonry arches of 60 ft. clear span (12 on the south and 3 on the north side of the river), it included three wrought-iron lattice girder spans—two of 141 ft. and one of 267 ft. between bearings—over the waterway, quays, and public road. The first lattice girder railway bridge in iron is reputed to be one of 84-ft. span designed by Sir John MacNeill and built in 1843 on the Dublin & Drogheda Railway. Sir John was also responsible for the conception of the Boyne viaduct—a great advance on the earlier structure—when he laid out the Dublin & Belfast Junction Railway. The Boyne viaduct, actually designed and built by Mr. James Barton, the company's Chief Engineer, included the first application on a large scale of the principle of multiple-lattice construction. A contract for the construction of the viaduct was placed with a Mr. Evans, but he failed financially before the foundations were finished, and the structure was completed by direct labour under the supervision of Mr. Barton. The total weight of wrought ironwork in the three spans was about 740 tons, and this was all fabricated at the site. The viaduct was very thoroughly tested by the Government inspector on March 30, 1855, and it was opened for traffic on April 4 of that year.

Although amalgamation of the railways constituting the Dublin-Belfast main line had been envisaged as long ago as 1847 (in which year the D. & B.J. was authorised to amalgamate with the Dublin & Drogheda or the Ulster), the first practical step was the merging from March 1, 1875, of the Dublin & Drogheda and the Dublin & Belfast Junction Railways as the Northern of Ireland. On January 1, 1876, the Irish North Western Railway (formerly the Dundalk & Enniskillen) was amalgamated with the Northern of Ireland, and finally, on April 1, 1876, the Ulster and the Northern of Ireland joined forces as the Great Northern Railway (Ireland), bringing under one ownership the whole main line between Dublin and Belfast, together, of course, with considerable other mileage. The system now extends to Londonderry in the north and Bundoran, on the Atlantic coast, in the west; its route mileage is 552, composed of 327½ miles in Northern Ireland and 224½ miles in the Irish Free State.

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Cab Signals on the American Diesels

THE Union Pacific streamlined diesel-electric trains, City of Denver, City of Los Angeles, and City of San Francisco, operating a high-speed service between Chicago, Denver, and Los Angeles in conjunction with the Chicago and North Western, and Southern Pacific lines, have been fitted with cab signal and train control apparatus of an ingenious—if, to British ideas, somewhat complicated—type, to enable the trains to work over sections fitted with different kinds of equipment. This serves to emphasise one of the problems of automatic train control, often insufficiently appreciated by inventors. In the development stages it is only natural that many devices should be tried, but some reasonable degree of uniformity will have to be established in the end. In the present case the trains have to run over sections fitted with speed control and cab signals of the continuous inductive type, a plain cab system only, with warning whistle and vigilance handle, or a train stop system of the intermittent inductive pattern. The problem was complicated by the use of both automatic and non-automatic brakes, the latter normally in action. When the train control apparatus is cut out, it is locked by a key kept by the guard. A full account of this equipment appears in *Railway Signaling* for August.

* * * *

Co-ordination of Transport

MR. JOHN MARCHBANK, the General Secretary of the National Union of Railwaymen, in delivering a lecture a few days ago to the students of a London technical institute, uttered some thought-provoking remarks concerning transport co-ordination. Beginning with an historical survey, he gave a crisp description of the growth in Great Britain of road, river and coastal transport, of the use of canals, of the introduction of steam-driven locomotives, of developments arising from the use of electricity for traction, and of the rise of the internal combustion engine. Mr. Marchbank said that overlapping and wasteful expenditure existed in the early days of railways, and he suggested that the construction of railways "lacked organisation from the point of view of national planning." He claimed that railway trade unionism had played a very important part in the development of transport, and "its influence has contributed largely towards achieving the progress which has been made." He gave illustrations intended to prove this, but we do not think his claim will be seriously contested, for it cannot be doubted that the railway trade unions have never hesitated to express—quite vigorously on occasion—their views on transport problems and policy. One illustration mentioned by Mr. Marchbank was that the unions "co-operated with the railway companies in their endeavour to obtain Parliamentary powers to engage in road transport—which powers were obtained in 1928." We certainly know that this help was of value to and was much appreciated by the companies.

In support of his clearly pronounced view that transport should be "brought under one control on a national basis," Mr. Marchbank pointed to the "experiment" of the London Passenger Transport Board, and went on to refer to the "legal compulsion put upon private interests on statutory bodies in order to secure amalgamations." It happens that last week the third annual report and accounts of the board were issued, and we have already commented upon this document, but so far as Mr. Marchbank's contention is concerned we do not think that the results of the plan for the co-ordination of transport in the London area necessarily provide a convincing argument in support of the trade unions' schemes for "one control," covering the whole country, of all forms of transport on land and water-and in the air. As we see it, the problem of London transport differs very materially from the vaster national problem, for the study of which a Transport Advisory Council was established by the Road and Rail Traffic Act, 1933. It cannot be denied, however, that the co-operation of the unions is an essential factor in arriving at a solution of the problem, although, perhaps inevitably under circumstances that impose restriction of output on all forms of industry, their views and those of employers are often in conflict.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

High Speed Junctions

9, Strathearn Road,
Edinburgh.
October 20

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The articles which have recently appeared under this title in THE RAILWAY GAZETTE will, I predict, be scrutinised with interest by many railwaymen, and if, Mr. Bond should object, by one of them with too critical an eye, let him remember that, in his no-limit junction, he is claiming to have solved one of the long-standing major problems of permanent way technique and moreover that he supports his claim by invoking apparently unorthodox principles. His ideas centre round a conception which he calls thrust. "It can be assumed," he says, "that the versines will give the precise measurement of the thrust felt by a passenger at 30 m.p.h. The thrusts at all other speeds will be proportionate." No assumption is required. That the centrifugal force and the versine are each inversely proportional to the radius is, for flat arcs, a simple fact and a reference to it would have spared us the repetition of such phrases as "the thrust rises to 2½ inches." As well say that the versine rises to 2½ tons. From loose terminology to loose reasoning is a short step and so to the thrust proportionate to the speed. Since Mr. Bond is concerned with the feelings of a passenger on a varying curve, should not the acceleration and its rate of changing be considered?

He thought it was a foot-sec³ that caused the traveller's fall.
He looked again and found it was a versine after all.
This modern theory, he said, is getting rather tall.

Mr. Bond is in real earnest, however, and must be met in the same spirit. His argument seems to rest on four propositions:—

1. Permissible speed is dependent on lateral force.
2. Centrifugal force is a lateral force.
3. The equation $K = \frac{Gv^2}{gr}$ connects centrifugal force with cant.
4. Let the cant be adjusted so as to reduce the force to zero, or to some predetermined amount, and the corresponding speed will be the highest permissible.

The flaw in this reasoning is, that if permissible speed is dependent on lateral force, it must be dependent on the total lateral force, and centrifugal force is not the only, or necessarily the most important, lateral force set up when a vehicle moves on a curved track. I know this fact is habitually ignored and often vehemently denied by writers and speakers, but to deny it is not only to deny Newton's laws of motion, but also the facts of everyday experience. Suppose a motorcar to have all its wheels fixed straight and parallel and also integral with solid axles, so that the near and offside wheels must turn at the same rate. Suppose it to be negotiating a bend, banked or not, at a speed so slow as to reduce Mr. Bond's thrust to zero. It will still be impossible to get it round without applying a lateral force as, for instance, by pushing with very considerable violence at the side of the bonnet. I will call this, somewhat loosely, the sluing thrust, to distinguish it from Mr. Bond s centrifugal thrust. The only difference between the car and a locomotive is that, instead of requiring some outside agency, the sluing thrust comes into play automatically in the form of pressure between the rail and the flanges of one or more of the outside wheels. Those who do not recognise this, and they are many, may ask why this sluing thrust is omitted from the formula already quoted. The answer is simply that the equation in question was compiled for the sole purpose of arriving at the cant, and not at the speed or the thrust. As the cant is dependent on the centrifugal force only, the inclusion of any other would have been superfluous and incorrect.

The absence of the sluing thrust from an expression in which it is not wanted proves neither in logic nor in fact that it does not exist. None the less, by mis-interpretation, repetition and the short-comings of text books, the idea that lateral force can be balanced out by cant, has become so embedded in many railwaymen's minds, that even when one of them observes a contradictory fact, such as excessive side wear of high rail on a heavy cant, and has the honesty to call attention to it, he treats it as a freak or an exception and not for what it is, a piece of evidence disproving his hypothesis. Not long ago, one of your correspondents, faced with the fact that slow trains on a high cant (*e.g.*, up-grade on a single line) persisted in refusing to cause side-wear of the low rail, invented a supplement to the cant-balance delusion, whereby the wheels and forces acted in all sorts of new ways. Were these antics the result of observation? Not a bit. They behaved, or were supposed to behave, in that way purely to oblige the gentleman and spare him from surrendering his belief that, on overcanted track the flanges, according to his theory at any rate, should have pressed against the low rail. Adherents of the formula, $K = \frac{Gv^2}{gr}$, as a means of ascertaining the lateral force or the permissible speed, frequently defend themselves by demanding something better. It has been provided, notably by Mr. Spiller (Proc. I.C.E. Vol. 176), and it would be idle for me to pretend to improve on it, particularly when the position, which he noted, remains the same, namely, that reliable data are lacking. Absence of agreement on the formula, or on the precise values to be assigned to the terms in it, cannot justify employing another which is demonstrably inappropriate.

Meanwhile, Mr. Bond will have his two-level chairs and what is more, he will have some increased speed as well, and it is probably fruitless to suggest that they have little or nothing to do with one another. When he touches on alignment he is nearer the truth but even so his suggestions are an odd compound of sense and sophistry. What can be made of his objection to tangency at the heel of the planing unless one supposes that he regards it is a property of circular arcs only? Allowing that much, the alternative of bending the curved part of the switch to a spiral is a refinement of the drawing office or rather of the classroom. The difference between a transitional and a circular arc of some 20 ft. in length and 3,000 ft. average radius is scarcely measureable, far less reproducable. A speck of mill-scale would almost throw it out. In discussing the switch and the crossings he appears to shrink from admitting that, until their defects are eliminated, they constitute, apart from matters of maintenance and so forth, the weakest points and as such must govern permissible speed. By all means let the alignment be improved wherever possible, but to ignore refractory elements and base large general claims on improvements somewhere else, is too much like putting the cart before the horse. True he lengthens the planing of the D switch and thus transfers it to the E category and it is with other switches in this class it should have been compared and not with D. No elaborate diagram is necessary to demonstrate that an E switch gives an easier entry than a D, it is what it is made for and we should all like to use the longest switches we can. What we want to know is how to make them open and close properly, stand up to hard wear and how to deal with the diamond. Mr. Bond tells us that F switches leading up to a 1 in 16 crossing and 1 in 14 diamonds are satisfactory. The photographs accompanying his article appear to show an ordinary 1 in 8 diamond with little or no widening of the six-foot. The position might have been made clearer. It would be sad to find that the no-limit junction is, after all, little more than an essay in the Wellsian manner.

Yours faithfully,

REGINALD PETERS

THE SCRAP HEAP

"Na, na. It's no use saying 'change at Peterborough,' young mon," said the Scot at the booking office, "I'll tak ma change noo."

* * *

WHEN THE ENGINE RAN AWAY

We extract the following from the *Preston Observer* of September 18, 1839:—"On Sunday week an engine started alone from the station at Manchester, and never stopped until it arrived at Parkside, a distance of 14 miles. We have not heard the cause of this extraordinary flight. Perhaps it had got tired with standing, and wished to breathe itself a little. We are happy to say that it did no injury in its headlong career, and that it stopped quietly when its breath was spent."

* * *

ART UNDER LEICESTER SQUARE

Nothing looks so blank as shutters on a bookstall. The observation had occurred, it seems, to London Transport, and, as a result of their initiative, the bookstall in Leicester Square tube station—one of those large circular underground halls with shops all round—has had its shutters adorned by Miss Margaret Blundell, the Liverpool artist. Miss Blundell had to do her painting of three colourful designs (one a newsboy spreading himself all over the world, one a pile of books, and one a neat composition of things for writing) on Sundays and at night when the bookstall was shut. The only thing to complain of is that nobody can see them until after closing time. They are very charmingly done. One may hope that the late revellers of Leicester Square will be in a proper and deserving frame of mind to appreciate them. —*From the "Liverpool Post."*

* * *

TRAIN CHEFS DARE NOT DISOBEY WOMAN BOSS

Six hundred men and "Our Lil" work at the Great Western Railway depot at Old Oak Common, London.

Miss Lilian Linfield is "Our Lil" to the whole six hundred, and if one of them said a wrong word to her or gave her a doubtful look the other 599 would have his blood.

The position she occupies began with her thirteen years ago and has never been given a name. She is responsible for all the crockery, glass, cutlery, kitchen utensils, and linen on every restaurant car that leaves Paddington. A car will sometimes set off with 240 spoons and return with 200, with fifty-two ashtrays and return with nine, with sixty glasses and return with fifteen.

"Lil" nearly weeps over the breakages and the unfathomable disappearances. Sometimes she gives the waiters and chefs a good scolding if she thinks they have been careless. Pantry boys as far away as Penzance have been terrorised with "You wait till Lil sees what you've done. She'll give it you."

Chefs give her the worst headaches. When a huge aluminium stewpan, saucepan, or soup ladle disappears she knows perfectly well that a zealous chef has taken it with him to his next train and hidden it. He always denies it and she always gives him a strong piece of her mind when she finds it.

"Lil's" housewifely care is evident in about 160 restaurant cars. Crockery that is badly chipped, bent cutlery, scratched, burned and worn plate, all go back with her to her room and are either thrown away or sent to the makers to be repaired.—*From the "Ottawa Evening Citizen."*

* * *

THE DESERT TRAIN

The railway track from Tunis to the South ran at the bottom of Megrine and was lined with thorny cacti and aloes. On many evenings I would descend to await the arrival of the train after midnight. When there was no moon the only visible things were the two silver rails, the link between the North and the South. The only signs of life were the field rats. While other animals were asleep, the field rats were at their best, dashing wildly from their holes and behaving as though they celebrated some nocturnal feast. Sometimes I would surprise them sitting in a circle, holding strange council.

The train announced itself by a faint hum of the rails. It was as though the rails were turning slowly into living beings. Their sough gradually became a metallic tune and, as the song grew, two lighted eyes, one yellow and one red, emerged from the blackness. A few moments later the train would tear the peaceful darkness into a terrific orgy of clattering noise and movement.

It was the first train painted all white I had ever seen. In its luxurious lightness it evoked visions of the desert, and was a symbol of the Africa of far away. Its destination was the farthest Tunisian oasis in the Northern Sahara. The hurrying, shrieking vision lasted no more than a few seconds; soon even its red rear light would disappear. Nothing but a last faint buzz of the rails bore witness to its passage. Yet each time I felt exhilarated as though I had experienced a great adventure.—*From "Seven" by Rom Landau. (Ivor Nicholson and Watson.)*

* * *

The following, which purported to be an extract from a work on zoology, appeared in 1843:—

The Share Bull.—This animal generally walks on his hind legs, and is of a cheerful disposition. His breast is of a yellow colour with small protuberances like metal buttons, and he provides himself with a blue upper garment which gives the animal the appearance of having two tails. His legs are of a fashionable grey colour and his head seems to be inside a white hat. A perpetual grin is on his countenance as if everything was "all right." His chief food is railway shares which he swallows in enormous quantities. While eating these, especially favourites which he relishes, he makes a loud bellowing noise roaring out the ejaculations, "a splendid traffic," "superb line," "best managed in the kingdom," "immense sources of traffic not developed," &c. This animal has other singular customs. When he gets anything heavy on his horns he makes astonishing efforts to toss it up, and make it rise. He also scrapes together with his front hoofs large masses of money, and puts them in a heap in the shape of a "plumb," and he becomes frequently a thorough "John Bull," and after death cuts up in large slices, which are swallowed with avidity by the surrounding young ones of his family—a species of cannibalism which shocks the best feelings of our nature.

A correspondent has sent us this example of railway advertising in Palestine eleven years ago, showing a poster published in English, Hebrew, and Arabic. A more recent tri-lingual poster was reproduced in our issue of May 25, 1934

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

NEW ZEALAND

Workshops Activity

Activity in the railway workshops in the principal towns has created employment for the record total of 4,400 men. Reference to this subject was recently made in a statement by the Minister of Railways, Mr. D. G. Sullivan, who said that the Government's policy of using the modern manufacturing facilities of the railway workshops for suitable classes of work required by other Government departments, added to the general improvements now being effected in railway rolling stock and other facilities, had produced a condition of great activity, and the employment of nearly 550 more hands than a year ago.

At Addington rush orders were being dealt with for bridge girder spans, for the Fox and Cook River bridges on the South Westland route and the Tutoko, Don and Gulliver bridges in the Eglinton Valley—Milford region. The amount of work which could profitably be placed with the railway workshops of the Dominion was likely to be even greater in the future, holding out prospects for further employment as business developed.

INDIA

Railway Breaches

Cyclonic storms in the first week in October produced torrential rain in Bengal, Bihar, Orissa, and the Central Provinces, and widespread dislocation of communications resulted. On the Bengal-Nagpur Railway breaches occurred on the main line between Garpos and Rajgangpur stations on the night of October 4 and 5, the up Bombay mail and other up and down passenger trains being held up at the breach. As transhipment was impossible on account of the swift current of the flood waters, passengers and luggage from the mail were taken back to Charhradharpur and thence sent on to Bombay via Asansol. Till the breaches were repaired, the B.-N.R. Bombay mail had to be diverted via the Raipur-Vizianagram route.

The bank at the Delhi end of the Adjai Bridge between Sankarpur and Jasidih stations on the East Indian Railway also slipped badly, and single line working had to be introduced. Further slips occurred on the Gujhandi-Gurpa section, and it was at one time feared that considerable dislocation of services would follow. In fact, the various wagon-ferry and other services on the Ganges connecting the East Indian and the Bengal & North Western Railways had to be temporarily suspended. Slips on the Dacca section of the Eastern Bengal Railway caused irregular railway services for a few days.

Accident to the Imperial Indian Mail

The crack train of India, the Imperial Indian Mail, carrying a limited number of overseas passengers and mails from Bombay to Calcutta, was concerned in an accident near Raniganj on September 26. An empty wagon attached to a passenger train which was running on the slow road just ahead of the mail became derailed and fouled the fast road. Before any warning could be given, the Imperial Indian Mail, travelling at 50 m.p.h., crashed into the wagon, which was thrown over the embankment. The mail engine was damaged but the train was safely brought to a standstill. The passengers escaped with a severe shaking. The engine of the passenger train took the mail train on to Raniganj.

Wheat Transport

Nearly a year ago, the North Western Railway offered a rebate of 25 per cent. on the freight on wheat railed to Karachi for export to ports west of Aden. The rebate will continue till January, 1937. During April and May last shipments of wheat from Karachi to ports west of Aden totalled 125,000 tons. Karachi merchants are endeavouring to induce the railway authorities to continue the rebate till December, 1937. It is stated that the freight rebate has enabled them to quote competitive rates in European markets. There is an apprehension at Karachi that the railway may not agree to continue the concession which is specially important to that port, as the reduction of exportable surplus in the wheat-growing countries is expected to create a demand for Indian wheat.

CANADA

C.N.R. Chairman's Message

Mr. S. J. Hungerford, on his appointment as Chairman of the Canadian National Railways, has issued a message to the staff of the railway, expressing the belief that through the joint efforts of the management and the staff the system could be made increasingly valuable to the Dominion and to every community it served. The management aimed at climbing the ladder of progress in the welfare of the undertaking, and, though it would not be an easy ascent from low operating revenues and small net income, the climb would be faced the better in the light of lessons learned, and the knowledge that all in the organisation were working in unity with the object of making the C.N.R. the great national asset its potentialities showed it to be. [A group showing Mr. Hungerford and the new board of C.N.R. directors is reproduced on page 762.—ED. *R.G.*]

Change in C.P.R. Pension Status

The Canadian Pacific Railway announces that the non-contributory pension system will be replaced on January 1, 1937, by a new scheme entailing contributions from eligible employees. The contributions will amount to 3 per cent. of the earnings of employees, and the larger part of the pensions allowances will be paid by the company while the fund is being built up.

Alberta Lines

Various local boards of trade and chambers of commerce have asked the Dominion Government to take over the C.P.R. share in the joint management of the Northern Alberta railways. On the other hand, the C.P.R. has been asked to construct a new line from Peace River to Fort Vermilion in order to facilitate the transportation of grain.

Mr. Sherrington on Canadian Railways

Mr. C. E. R. Sherrington, Secretary of the Railway Research Service (London), addressing the Railway Club of Canada at the Windsor Hotel, Montreal, on October 15, predicted that within the next five years Canada would be glad of every mile of railway she had. Continuing to refute the contention that far too much railway had been constructed in the Dominion, he expressed the view that with diesel traction even light branch line traffic should be remunerative, though he warned his audience that the existing train crews of up to five men—as against a maximum of three in England—mitigated against this satisfactory end.

As a tonic for those who continually croaked about "the very serious railway problem in Canada," he prescribed a visit to some of the European Continental countries, whose railway financial positions compared very unfavourably with those here. The extensive development of the natural resources of the Dominion, was, he said, the most hopeful feature, as it was bound to lead to increased profitable traffic.

FRANCE

Paris Metro Air-raid Shelters

The recent mock air-raid in Paris, when the whole city was in darkness for an hour, provided a test of the measures taken for protection against bombers and gas attacks. The question has since been raised as to whether the number of underground air-raid shelters on the Paris Metro should be increased, or whether it would not be better to equip bomb- and gas-proof shelters in

suitable cellars of the houses in Paris. If all the proposed Metro shelters were completed, refuge for 800,000 people would be provided. In the 22,000 cellars already listed as suitable for shelters, 800,000 more could find protection. Even then, it is estimated that 2,000,000 would be left shelterless. It is pointed out also that the use of the Metro for public shelters would deprive the population of the possibility of escape from threatened areas by means of the underground trains, as the train services would be stopped.

Description of Shelters

At present, two large public shelters at Metro stations are ready for use, one at the Place des Fêtes, about 70 ft. below the surface, under the hill of Belleville, and the other at the Maison Blanche, about 27 ft. deep, near the Porte d'Italie. The cost of construction in each case was fr. 2,000,000, or somewhat less than £20,000 at current rates of exchange. They are provided on the tunnel side with insulating doors which can be closed in four minutes. Ventilation suction fans draw in air through filters at the rate of 10,000 cu. m. (353,165 cu. ft.) an hour. Admission to the shelter is through swing doors of a series of six or seven compartments designed to prevent entrance of gas, any contaminated air being driven out by maintaining the interior air at higher pressure than the exterior. Estimates provide for the construction of 130 such Metro shelters.

Metro Shelters Opposed

But the scheme of Metro shelters is meeting with opposition. It is pointed out they are not free from danger. Any malevolent action might imperil the lives of thousands. Moreover, the shelters are not close enough to the homes of those seeking safety. Hence it is suggested that the risks would be minimised by shelters for small groups in house cellars. Another reason in favour of cellars is the long time it would take 8,000 panic-stricken women, children, aged and infirm to descend the escalators or staircases to occupy one of these Metro shelters. As only twenty-five minutes would elapse between the signalling of the enemy planes and their passage over Paris, it is calculated that not half the people would have time to reach safety.

Improving Traffics

For the past two months French railway traffic has shown improvement. The constant increase in number of wagons loaded seems to point to a general business recovery. In the week ended October 6, the number loaded reached a record for the year of 304,808 wagons, an increase of 2·4 per cent. on the corresponding week last year. In the week to October 13 the improvement continued with a total of 317,996 wagons, an increase of 3·68 per cent. The total loaded for the year to October 13 is 11,375,216 wagons, against 11,368,324 for the same period last year. Passenger traffic receipts for the week ended October 6, the latest issued, increased to fr. 63,636,000, against fr. 53,721,000 for the same week a year ago.

New Type of Luminous Guide

A luminous guide to the Paris Metro system has been tried with success at the Hôtel de Ville station. It consists of a Metro plan, on which the route to any point lights up when the passenger operates the device. The plan is to be used in all stations. At the suggestion of a municipal councillor an addition to the apparatus is to be made in the form of a roller on which is wound a list of the names of the streets and principal buildings with the nearest Metro station indicated. Tourists and provincial visitors may thus easily find their way to any part of Paris. The supplementary roller apparatus will be given a trial at ten stations.

SPAIN

War Conditions

For some time there has been only one line open to Madrid, resulting in very serious congestion. Trains are running in both directions every few minutes, carrying troops and provisions and evacuating children. Some of the passenger trains are of great length, many consisting of thirteen or fourteen all-steel coaches. The regular expresses to the city frequently arrive from eight to ten hours late. Locomotives and rolling stock in this area are being worked very hard, and, whilst efforts are being made to keep them in good repair, they are beginning to look the worse for wear; the interior of the passenger vehicles is becoming particularly shabby.

Before anyone can travel from one city to another he must get special authorisation from the military authorities. Documents must be shown with tickets before boarding a train, and are also inspected by innumerable officials *en route*. Every train carries a number of secret police and armed militia. Soldiers bearing third class tickets firmly plant themselves in first class carriages and refuse to be moved, with the result that there is often a shortage of seating accommodation for fare-paying passengers.

Taking Over of Railways Legalised

On October 1, the Spanish Cortes assembled in Madrid and Congress approved and passed into law, in a one-day session and without discussion, all the Bills promulgated by the Popular Front Government since July. Among these is the Bill of August 3, under which the principal railways were taken over by the State, to be managed by a mixed committee made up of six civil servants appointed by the Government and six labour representatives nominated by the syndicates and trade unions, as recorded in THE RAILWAY GAZETTE of August 28. As was then pointed out, not only were the railways taken over but the service of debenture interest and other first charges was suspended, regardless of the Commercial Code and mortgage laws. The legality of the Bill was then questionable, inasmuch as it could not override a law, but the measure has now been placed on the Statute book by the approval of the Cortes and therefore becomes a law of Spain; this destroys any hope the bondholders or shareholders may have had of claiming their property or compensation for it, at least as long as the present Madrid Government remains in power. The net earnings of the railways, if any, will now go with other confiscated property of private persons and corporations alike, to swell the Popular Front revenue, forming part of what Dr. Negrin, the Socialist Minister of Finance, euphemistically calls "the fruits of the insurrection." Dr. Negrin, in a note to the Madrid press, refers to the confiscation of property as a just retribution "anticipated with a magnificent sense of historic justice by the workers' organisations." Thus the Madrid Government attempts to justify the action of its followers in seizing the railways and other properties, an action now legalised by the approval of the "constitutionally elected" Parliament.

A notification has appeared in the Madrid *Gazette* appointing Señor Trifon Gomez as a representative of the Finance Ministry on the Superior Council of Banking. Señor Trifon Gomez was well known for many years as the Secretary in Madrid of the National Railwaymen's Syndicate. His appointment to this new sphere may be taken as an example of the introduction of new methods into the finance as well as into other branches of the public administration, under the rule of the Popular Front Government.

Commendation for Railwaymen

The Minister of Public Works addressed the Madrid railway workers, on October 20, in recognition of their work in constructing the armoured trains now defending the capital. The Minister acknowledged and praised the heroic comportment of the crews working the armoured trains.

The *Federacion Nacional de la Industria Ferroviaria* (National Federation of the Railway Industry) has just held a plenary session in Madrid. Among other business a sub-committee was appointed to consider and report on the question of railwaymen's wages. It was to be expected that even in the stress of a civil war, and with the capital almost besieged, the question of wages would not be long deferred.

The Workers' Council of the Madrid Metropolitan underground railway has decided to run a regular night train service, for the convenience of night workers, with a flat rate ticket of 15 centimos; the whole proceeds of the service are to be devoted to the *Socorro Rojo Internacional* (International Red Succour).

FLYING AND BURROWING JUNCTIONS ON THE SOUTHERN RAILWAY—I

By S. BARTER (Assistant for New Works and Rules and Regulations, Southern Railway)

INCORPORATED in the scheme of improvements and resignalling of the approach to the Waterloo terminus of the Southern Railway (see THE RAILWAY GAZETTE of May 22 and 29, 1936), is a flyover line east of Wimbledon station. The provision of this new flyover was in pursuance of the policy adopted by the Southern Railway for very many years, and it brings the total number of flying and burrowing junctions on this railway to twenty-five, twenty-two of which are to be found in the suburban and outer suburban areas, and three in main-line areas beyond.

The earliest record of a flyover line on a constituent of the Southern Railway occurs in the year 1847, when an additional down line was provided outside the down main (to Brighton) line from Norwood junction and was carried over the down and up main lines at Old Croydon junction, to join the existing down line to West Croydon. This flyover marked the beginning of a remarkable development of tracks in an area regarded as the key position of the London to Brighton main line, viz., Selhurst —Norwood junction—East Croydon, and because the final stage of development, which was reached about 1912, presents a complicated layout, it is interesting to record, stage by stage, in the series of diagrams herewith, the enterprise and foresight shown by the former London, Brighton & South Coast Railway.

Fig. 1 shows the original line, in 1839, of the London & Croydon Railway, which ran from London Bridge to its terminus at West Croydon. The opening of the line to East Croydon and Brighton in 1841, resulted in the formation of the Old Croydon junction with the London Bridge-West Croydon line, shown in Fig. 2. Six years later (1847) saw the introduction of the Norwood Junction—West Croydon flyover previously referred to, and although at that time the up line from West Croydon remained a trailing junction with the up main line at Old Croydon junction, that line (from West Croydon) was in 1853 made an independent and additional line from Old Croydon junction (now Norwood Fork junction) to Norwood Junction, as shown in Fig. 3. Fig. 4 portrays a very important stage in the development of lines in the area under notice, for in the year 1862 a new double line was opened from London (Victoria station) to East Croydon, and this, by means of a bridge, passed over the West Croydon lines and joined the main lines east of East Croydon at Windmill Bridge junction.

Later in the same year (1862), up and down spur lines were opened (see Fig. 5) between Selhurst and Norwood Fork junction, the down line from Selhurst being laid on the flat, while the up line from Norwood Fork formed a junction with the down West Croydon line, and by means of a bridge passed over the up West Croydon line. These spurs enabled the L.B. & S.C.R. to introduce a " round-about " service of trains between Victoria and London Bridge via Selhurst and Norwood Junction. In this year also, lines were projected from the down and up West Croydon lines at Norwood Fork Junction to Central Croydon, passing under the Victoria lines by a separate bridge adjoining that accommodating the West Croydon lines. The facing points for the Central Croydon down line were close to Norwood Fork signal-box, and the two down lines were gauntletted to the point of divergence.

The next improvement concerned the running of a service of trains from Victoria direct to West Croydon, and so in 1865 (see Fig. 6) down and up spur lines were laid in between Selhurst and Gloucester Road junction; at the same time a junction was formed between the lines to Victoria and the Central Croydon lines at Windmill Bridge junction.

The final development of flying and burrowing junctions in this area came in 1908 (see Fig. 6) when in connection with the widening of the line from Victoria, completing four lines to Selhurst, additional local lines were brought into use between Selhurst and Windmill Bridge junction, diving under the through lines at Gloucester Road junction, from which point the down and up local lines were

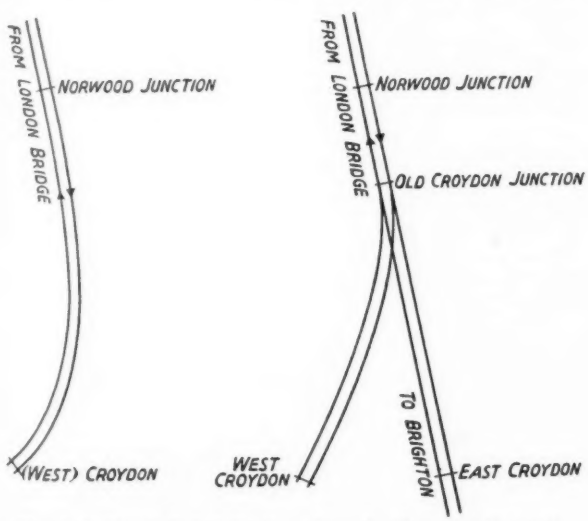


Fig. 1 (left)—L.B.S.C.R. line through Norwood in 1839, and Fig. 2 (right), Old Croydon junction in 1841

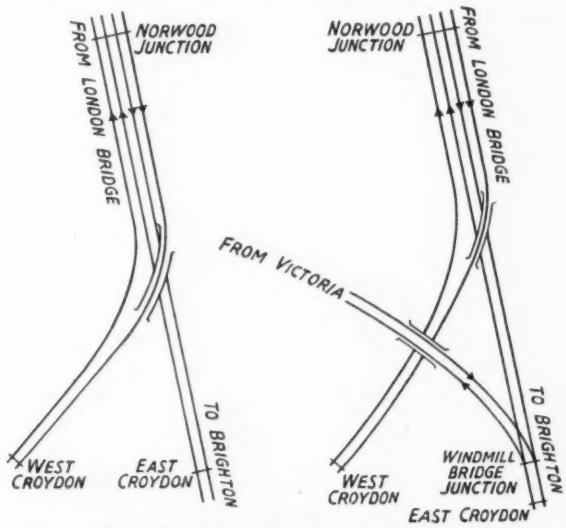


Fig. 3 (left)—The Norwood junction–West Croydon flyover in 1853, and Fig. 4 (right), the new junction of 1862

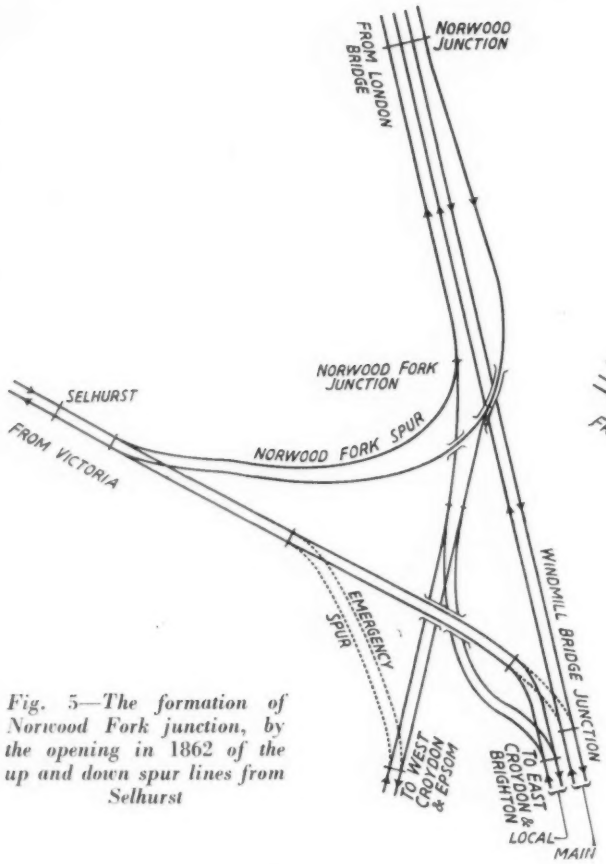


Fig. 5—The formation of Norwood Fork junction, by the opening in 1862 of the up and down spur lines from Selhurst

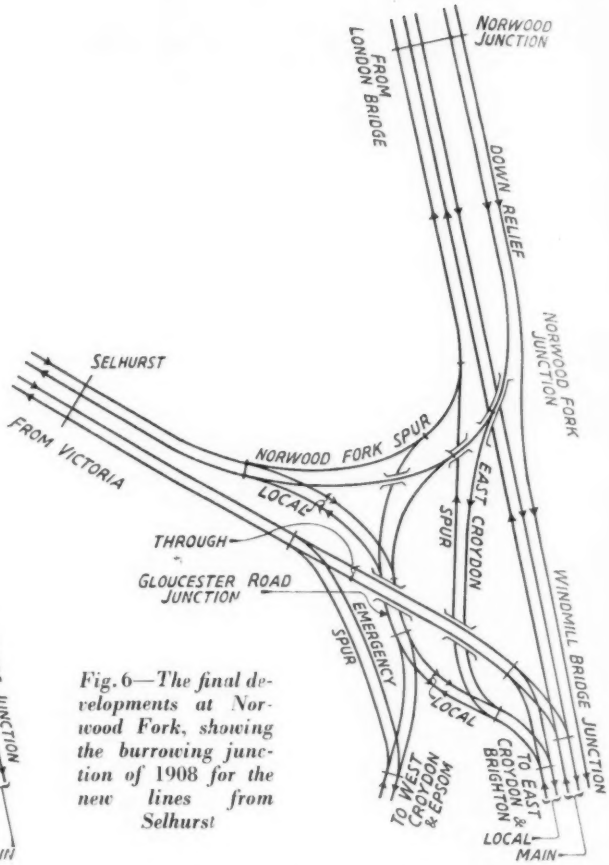


Fig. 6—The final developments at Norwood Fork, showing the burrowing junction of 1908 for the new lines from Selhurst

continued to join up with existing local lines (formerly Central Croydon lines) at Windmill Bridge junction. The down relief line between Norwood Junction and East Croydon shown in Fig. 6 was added later, about 1912.

Following the Norwood Fork flyover in 1847, the L.B. & S.C.R. introduced in 1849 the first burrowing line (see Fig. 7), when in order to afford access between the shunting yard on the up side of the line at New Cross Gate and some new sidings on the down side leading to Deptford Wharf, the yards in question were connected by means of a burrowing line which avoided the crossing of the main lines between London Bridge and New Cross Gate. In this area two further burrowing lines (Fig. 7) were brought into use in 1869 when new up and down lines were opened for the running of East London line trains

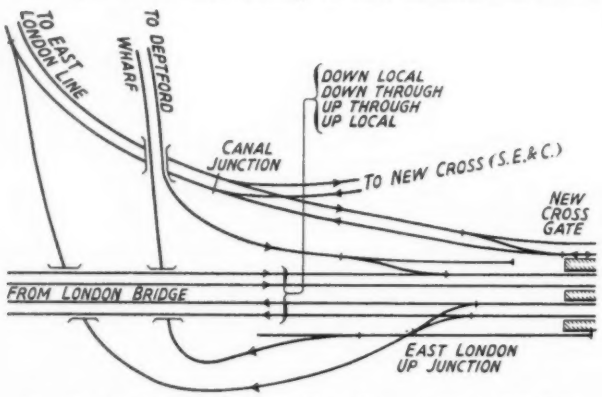


Fig. 7—Burrowing lines at New Cross Gate, L.B.S.C.R.

to and from New Cross Gate and beyond, the up line to the East London Railway leaving the up main (L.B. & S.C.) lines at East London Up junction, and burrowing under the main lines north of the Deptford Wharf burrowing junction; the down East London line in turn burrowed under the Deptford Wharf line and entered New Cross Gate on the down side of that station. At a later date an up line for East London trains was constructed parallel with the down East London line, so that both up and down trains used a single platform line on the down side at New Cross Gate.

Fig. 8 is a good example of the utility of a flying junction where the crossing of important main lines is involved, and depicts the introduction in 1854 of lines to Crystal Palace at Sydenham Junction, where the down flyover line diverges from the down local line, thus avoiding obstruction of the main lines between London Bridge and East Croydon.

In 1857 the L.B. & S.C.R. extended its Victoria-Crystal Palace line to Norwood Junction, the down line "flying" over the main lines to London Bridge (see Fig. 9); a

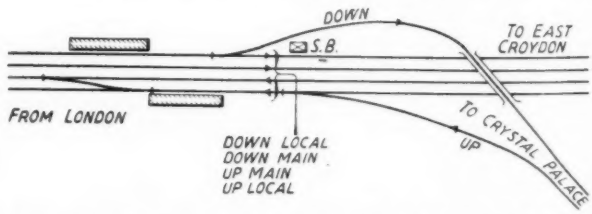


Fig. 8—The flyover at Sydenham opened by the L.B.S.C.R. in 1854

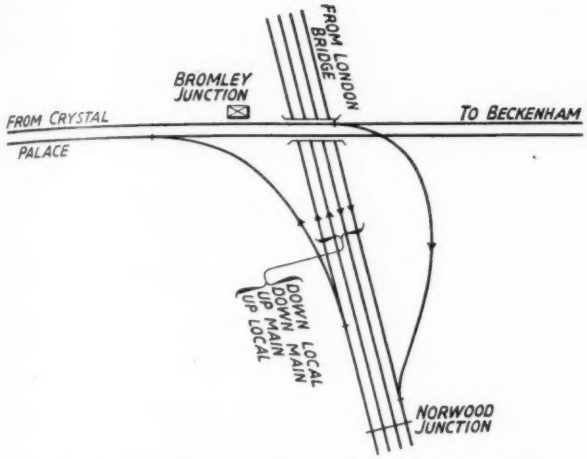


Fig. 9—Crystal Palace–Norwood connection of 1857

year later (1858) an extension was added to Beckenham from Bromley Junction, thus giving access to London for London, Chatham and Dover trains.

The first burrowing line to be formed on the Eastern Section (former S.E. & C.R.) was in 1866 (see Fig. 10) and was provided between South Lambeth Junction and Battersea Pier " B " Junction for up trains. The up line between these points was formerly used by the London, Chatham and Dover trains direct to Victoria, there being

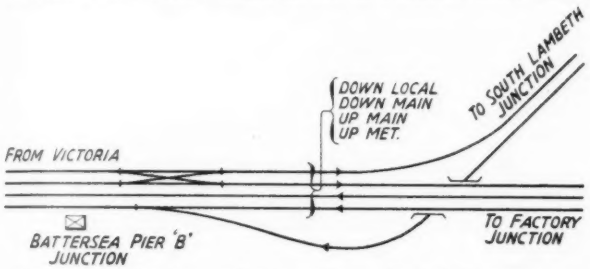


Fig. 10—The first burrowing junction on the S.E.R., at Battersea Pier (1866)

then no junction at Battersea Pier, but with the subsequent introduction of independent main lines for L.C. & D. trains between Victoria and Factory junction (Wandsworth Road), the up line as from South Lambeth was diverted under those new lines and rejoined the up line at the new junction at Battersea Pier.

In 1869 (Fig. 11) occurred the first introduction by the former L.S.W.R. of a burrowing line, when in connection with the opening in that year of the line between Malden and Kingston-on-Thames, a burrowing junction passing under the main lines between Waterloo

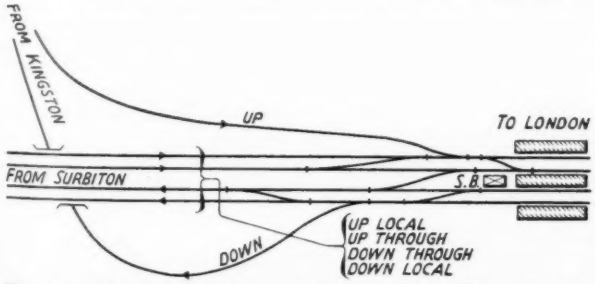


Fig. 11—Malden junction, the first burrowing line on the L.S.W.R. (1869)

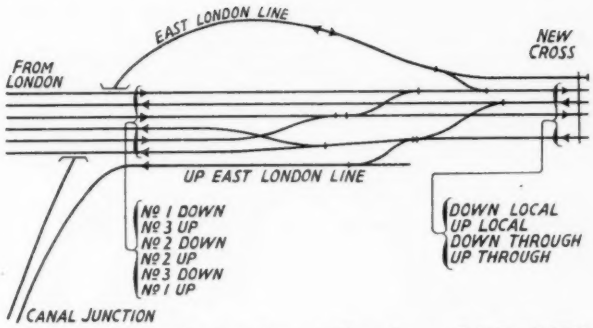


Fig. 12—Burrowing junction at New Cross, S.E.R. (1880)

and Surbiton was laid in at Malden for down Kingston line trains.

In 1880 a single line for the East London Line trains was laid in on the down side at New Cross station (S.E. Railway) commencing at a point near Canal Junction; and a facing connection from the single line to the down local line was also provided for through services to the S.E. company's system. As will be seen by Fig. 12 the single line burrows under the main lines thus avoiding interruption of important main line and suburban services to and from London.

Fig. 13 shows an interesting flyover line west of Twickenham station, which was introduced in 1883 to serve up

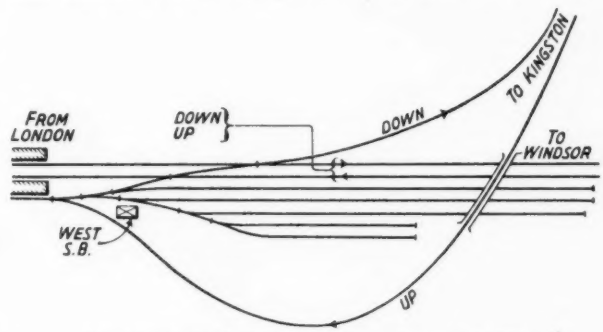


Fig. 13—L.S.W.R. Twickenham flyover of 1883

trains from the direction of Kingston and Shepperton, which by this means avoided, and took the place of, the crossing on the level of the up and down lines to Windsor and Reading. The Twickenham flyover was a year later (in 1884) followed by a burrowing junction at Raynes Park (see Fig. 14) where, in lieu of the old junction on the level, the up line from Leatherhead was taken under the main lines and served Raynes Park station on the up side.

(To be continued)

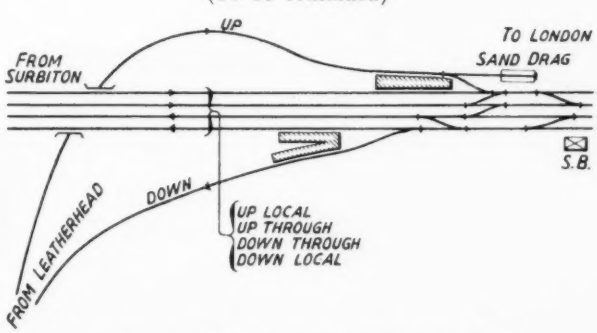


Fig. 14—L.S.W.R. Raynes Park junction, 1884

THE IRISH INTERNATIONAL MAIN LINE

The Great Northern Railway (Ireland) owns and works a system of some 552 route miles, all on the Irish standard gauge of 5 ft. 3 in. It provides the main link between the Irish Free State and Northern Ireland, and includes two early railways incorporated 100 years ago

UNDER the Irish Free State (Agreement) Act of 1922, the Irish Free State (*Saorstat Eireann*) was established as a coequal member of the British Commonwealth of Nations with a territory comprising the whole provinces of Leinster, Munster, and Connaught, and the three Ulster counties of Cavan, Donegal, and Monaghan. The immediate consequence was to establish an international boundary, with the usual customs formalities, between the Free State and the territory of the Government of Northern Ireland (the remaining six counties of Ulster). Subsequent railway grouping in the Free State has resulted in all the railways entirely on I.F.S. soil being merged into the Great Southern Railways, but systems working on both sides of the border were left ungrouped, and therefore the Great Northern Railway (Ireland) was unaffected. It is the chief international railway undertaking in Ireland, both by reason of its length and the importance of the territory served, the latter including the main line between Dublin, the I.F.S. capital, and Belfast, the seat of the Northern Ireland Government and by far the largest industrial centre in the whole island, with a population of some 415,000.

The G.N.R. system comprises 552 route miles (134 double track), all on the Irish standard gauge of 5 ft. 3 in., extending from Dublin in the south to Belfast and Londonderry in the north, Warrenpoint and Newcastle in the east, and Bundoran, on the shores of the Atlantic, in the west. The company also owns jointly with the L.M.S.R. the County Donegal Railways, a 3 ft. gauge system totalling, with the worked line of the Strabane & Letterkenny Railway, some 110 route miles.

It is, however, with the international main line between Dublin and Belfast that we are chiefly concerned. Leaving Dublin, where are the administrative headquarters offices, the line runs along the coast as far as Drogheda, and there crosses the River Boyne by an imposing viaduct to which more detailed reference is made later. Thence it runs inland to Dundalk, where the company's locomotive, carriage, and wagon workshops are situated. From Dundalk there is an ascent of 400 ft. in 11 miles, with gradients varying from 1 in 100 to 1 in 142, through the Carlingford Mountains, and from this point the line falls for several miles with similar gradients as far as Goraghwood, whence they are fairly easy to Belfast. The international boundary is crossed between Dundalk and Goraghwood at 59½ miles, and these stations have been selected as the customs examination posts.

The whole G.N.R. system comprises 721 track miles, and the permanent way on the main lines consists of 90-lb. B.S. bull-head rails 60 ft. long with 24 sleepers to the length; branches are laid with 85-lb. B.S. flat-bottom rails 60 ft. long, also on 24 sleepers to the length. In order to avoid duplication of patterns and to minimise stocks, all points and crossings and the permanent way on passenger lines through all stations is of 90-lb. bull-head B.S. section. With the exception of the line which formed the Ulster Railway, the whole system was originally laid with flat-bottom rails, but increased loads and speeds led to the adoption of the bull-head rail on the main lines, although on branches the flat-bottom rail has been retained. The main lines and most important branches are ballasted throughout with broken granite obtained from the company's own quarries at Goraghwood.

Sketch map of the Great Northern Railway (Ireland) system, and the County Donegal Joint Railways

where there are three crushers, two of which are constantly at work; the ballast is conveyed to the desired locations in 20-ton hopper wagons and spread with a special plough. Owing to the nature of the country through which the line passes, the number of bridges is exceptionally large.

On the Dublin—Belfast line, the principal passenger stations are Dublin (Amiens Street), Drogheda, Dundalk, Portadown, and Belfast (Great Victoria Street). Amiens Street station covers an area of 3½ acres, and has four platforms 635, 561, 505, and 175 ft. long respectively. Three of these are signalled for use as departure as well as arrival platforms, but the fourth is a short dock used only for departures. The number of passengers handled is about 2,000,000 per annum. There is half a mile of sidings available for storage of passenger coaching stock. Sheriff Street (Dublin) goods depot, together with the adjoining locomotive depot and garage for the company's buses and other road vehicles, covers an area of 8½ acres and has standing accommodation for 220 wagons. There are two goods stores and one store used almost exclusively for potato traffic. The yearly average tonnage dealt with is 106,000 tons. The cattle depot covers an area of 10,571 sq. ft. and consists of six pens, constructed in 1924 to the requirements of the I.F.S. Board of Agriculture and capable of accommodating 500 head of cattle. The pens lead direct on to the cattle-loading bank, which is double-sided and thus enables two trains to be loaded at the same time—one of 12 wagons and one of nine wagons. Both platforms are equipped for washing wagons, and a special system of drainage is provided for carrying away waste water. About 108,000 animals are dealt with at the loading bank each year, 8,500 wagons being handled. The locomotive depot consists of one single-ended engine shed, with four roads complete with pits, workshop, and so forth, capable of accommodating 16 tender engines.

Great Victoria Street station at Belfast covers an area of 5 acres, includes 1½ miles of sidings for storage of coaching stock, and has five platforms, 550, 556, 650, 610, and 263 ft. in length respectively, all of which are signalled for arrival as well as departure of trains. About 2,500,000 passengers are handled yearly. The Belfast goods depot at Grosvenor Road has standage accommodation for 735 wagons, including two small groups of marshalling sidings, giving accommodation for 170 wagons. The yard covers an area of 22 acres and contains three large goods sheds, while Guinness, Son & Co. Ltd. rents a large store for dealing with porter traffic. The average tonnage of traffic dealt with yearly is 545,000 tons. Maysfields is the Belfast cattle station. The 22 open pens and passages there cover an area of 60,000 sq. ft. and give accommodation for 600 head of cattle and 200 sheep. In addition, the 17 pens and passages at Oxford Street (communicating with Maysfields) have an area of 13,200 sq. ft., with accommodation for 425 head of cattle, which are used in the busy cattle season, when the Maysfields yard is over-taxed. There are also inspection traps for cattle and sheep. The four covered lairages have an area of 13,800 sq. ft. and give accommodation for 310 head of cattle. Approximately 19,000 wagons and 180,000 animals are handled yearly. The double-sided unloading bank can deal with 80 wagons at once. The only marshalling yard is at Adelaide, Belfast, where there are 9 sidings, affording accommodation for 278 wagons. With the attendant shunting necks, the yards cover an area of 10 acres. On an average, 1,200 wagons are dealt with daily.

The G.N.R. (I.) has a connection at Amiens Street, Dublin, with all sections of the Great Southern Railways for passenger traffic to and from south-western and south-eastern districts. Goods traffic for these sections are dealt with at Dublin via the North Wall extension, as also are the cross-channel services. There are also outlets for similar traffic with the Great Southern Railways at Belturbet, Cavan, and Navan, while at Enniskillen there is the junction for the Sligo, Leitrim & Northern Counties Railway, which, in turn, gives access to the Great Southern Railways at Collooney. At Cookstown and at Antrim, passengers and goods train services are linked up with the Northern Counties Committee of the L.M.S.R., at Strabane with the narrow-gauge lines of the County Donegal Railways Joint Committee, jointly owned by the G.N.R. (I.) and L.M.S.R.; and at Letterkenny with the Londonderry & Lough Swilly Railway. At Londonderry there are connections for goods traffic with the L.M.S.R. (N.C.C.) and the Londonderry & Lough Swilly Railway. At Belfast and at Castlewellan (near Newcastle) connections for passenger and goods traffic are made with the Belfast & County Down system, and at Dundalk and Newry with the Dundalk, Newry & Greenore Railway; the last-named railway, although owned by the L.M.S.R. as successor to the old L.N.W.R., is worked and managed by the G.N.R. (I.).

There are five express trains running in each direction daily between Dublin and Belfast (a distance of 112½ miles) as under:—

Dublin	..	dep.	6.40 a.m.	Belfast	..	arr.	9.10 a.m.
,,	..	,,	9.0 ,,	,,	..	,,	11.35 ,,
,,	..	,,	12.0 ,,	,,	..	,,	2.55 p.m.
,,	..	,,	3.15 p.m.	,,	..	,,	5.55 ,,
,,	..	,,	6.40 ,,	,,	..	,,	9.20 ,,
Belfast	..	,,	8.15 a.m.	Dublin	..	,,	11.0 a.m.
,,	..	,,	10.30 ,,	,,	..	,,	1.10 p.m.
,,	..	,,	2.45 p.m.	,,	..	,,	5.30 ,,
,,	..	,,	5.40 ,,	,,	..	,,	8.5 ,,
,,	..	,,	7.10 ,,	,,	..	,,	10.20 ,,

6.40 a.m. down and 8.15 a.m. up are breakfast-car trains.

12.0 down luncheon-car train.

5.40 p.m. up, 6.40 p.m. down, 7.10 p.m. up dining-car trains.

On all other trains buffet cars are provided on which light meals and refreshments are served.

The express train leaving Amiens Street at 6.40 p.m. for Belfast, gives connections at Drogheda for Oldcastle; Dundalk for Carrickmacross, Cootehill, and all stations to Enniskillen and Cavan branch; and at Goraghwood for Newry and Warrenpoint. Passengers can leave Euston at 8.45 a.m. and travel via Holyhead, connect with this train, and reach Belfast at 9.20 p.m. the same day. Passengers travelling by this route between England and Northern Ireland are not subjected to any trouble with luggage owing to Customs examination, as it is placed in a sealed compartment on the steamer at Holyhead and transferred under customs supervision at Kingstown to a sealed compartment in the G.N.R. van, and is not interfered with until released at the customs barrier station at Goraghwood. The same arrangement applies in the reverse direction in connection with the luggage of passengers travelling by the 5.40 p.m. up mail from Belfast for cross-channel stations. This is a great convenience and is much appreciated by the public who use the Kingstown and Holyhead route to and from Northern Ireland.

During the summer months through carriages are run between Dublin and Portrush by the 9.0 a.m. train, via Antrim, and in the reverse direction by the 11.45 a.m. ex Portrush, which connects at Antrim with the 1.30 p.m. to Lisburn, and at Lisburn with the 2.23 (S.O.) and 2.34 (S.E.) to Portadown, being there attached to the 2.45 p.m. ex-Belfast. There is also an express train run from Clones to Bundoran, taking forward through coaches from Dublin and from Belfast by the 9.0 a.m. and 9.25 a.m. trains

respectively, and an express from Bundoran to Omagh, with through carriages for Dublin (in connection with the Holyhead steamer), and for Belfast (for Liverpool and Heysham cross-channel service).

Signalling

The lines are signalled in accordance with the requirements of the Ministry of Transport, Northern Ireland, and the Ministry of Industry and Commerce, Irish Free State; the requirements of the two Government Departments are identical with those of the British Ministry of Transport. The double line section is equipped with double-line block instruments, and is worked on the absolute block system, while the single line section is equipped with electric train staff instruments, also worked on the absolute block system.

The fixed signalling is all mechanical with the exception of that in connection with the Boyne viaduct, Drogheda. The up and down lines across the viaduct are interlaced and the lines are completely track-circuited. On the up line at the northern side of the viaduct electrically-operated distant, outer home, and inner home signals are provided. The distant signal is 2,750 yd. from the signal box, the outer home is 1,750 yd. and the inner home 850 yd. from the box. On the down line an electrically-operated starting signal is provided, and at the opposite side of the viaduct an electrically-operated advance signal is fixed 600 yd. in advance of the interlaced up and down lines and 1,300 yd. from the signal cabin; this enables a down train of maximum length—after having crossed the interlaced lines on the viaduct—to stand on the down line entirely clear of the viaduct when waiting acceptance from the signal box in advance. These signals are operated by 10-V. batteries situated at the signals and controlled from the mechanical interlocking frame in Drogheda North signal box, which is situated upon the south side of the viaduct. The adoption of electrically-operated signals in this case avoided the provision of an additional signal box on the north side of the viaduct.

At places where traffic conditions make it necessary, track circuit control in combination with mechanical signals is provided. Outer home signals in combination with track circuits are provided at all junctions and other stations where such equipment provides a necessary traffic facility. In the Belfast area (which is the area with the greatest density of traffic) the fixed signals are fully controlled by track circuits through the sections, and the signals are so placed that under absolute block rules five trains can be dealt with where ordinarily only three could be worked.

On the double lines most of the signal boxes are provided with switching-out apparatus, and the signal boxes are opened only when absolutely necessary for traffic working. On the single lines switching-out apparatus has been provided on the following block sections: Clones—Smithborough, Smithborough—Monaghan, Tynan—Killylea, Killylea—Armagh, Dungannon junction—Donaghmore, and Donaghmore—Pomeroy; but on the remaining single lines the traffic conditions make it necessary to have signalmen on duty for the purpose of shunting and the crossing of trains. The passenger line signal arms are 3 ft. 6 in. long and 10 in. wide, and are the smallest signal arms used for main line purposes on any British railway, but in practice they are found to be quite satisfactory. The siding signal arms are 2 ft. 6 in. long and 7 in. wide, while the disc signals are of the usual rotating type. The signal lamps are of the company's own pattern, $\frac{3}{8}$-in. flat wick, and burning ordinary paraffin oil. These lamps will burn for three days without attention, if necessary. Long-burning signal lamps are not the standard because, owing to traffic conditions, part-time staff is available for regular filling and trimming. At a few minor signal boxes on the single lines the electric train staff instrument bells operate a loud-sounding bell fixed outside the box and in goods sheds. This obviates the necessity for a signalman to remain in the box, and permits of his performing other duties at the station or in the goods yard in the intervals between trains.

The interlocking frames are of the usual type with tappet locking, the levers being spaced 4 in. apart. By adopting a spacing of 4 in. between the levers it is possible in the older cabins (where the spacing was much greater) to insert new locking frames with a large number of levers without extending the signal cabin structures. The levers of the standard pattern interlocking frame have a larger travel than some of the older pattern frames. This has the advantage of making it easier for the signalman to operate points and signals which are a long distance from the signal cabin. Telephones are provided in all signal boxes, and in order to save expenditure on additional telephone wires, the telephones are all superimposed on the block instrument, or electric train staff instrument wires.

Locomotives and Rolling Stock

The company's steam locomotive stock comprises 194 units, including 1 for departmental use. The maximum axleweight permissible is 21 tons, graduated to 15½ tons on certain restricted sections of the line. For more than 20 years only six types of locomotive have been built, with five types of boilers. Boiler pressure is 175 lb. per sq. in. in all locomotives, except in the largest class for Dublin—Belfast service which works at 200 lb. per sq. in., although in the five three-cylinder compounds 250 lb. is the nominal pressure. Of the total locomotive stock 78 per cent. is superheated, 93 per cent. of the passenger engines and 62 per cent. of the goods. Piston valves are used in all superheated engines, except in a few of the smaller 0-6-0 goods engines where the old type of bronze slide valve (unbalanced) continues to give satisfaction. In the case of the majority of the smaller types of passenger locomotive, the conversion from saturated to superheated was carried out without its being necessary to raise the boiler or alter the valve gear, as a special type of piston valve cylinder was designed which overcame the difficulty. Successful experiments have recently been carried out with one express locomotive fitted with oil burning apparatus on the Laidlaw Drew principle.

Two types of modern tender, having 2,500 and 3,500 gall. capacities, are in use, the former for work on some of the lighter lines; the latter is, however, now the standard. All engines are fitted with the automatic vacuum brake, and 90 per cent. with steam pipes for steam heating apparatus.

The coaching stock consists of 584 vehicles, nearly all of which have been built at Dundalk works. The standard carriage is 58 ft. long by 9 ft. 6 in. wide over body. Since 1934 steel panelling has been adopted for sides, ends and roof exterior. Previous to this date pressed steel bogies of 8 ft. or 10 ft. wheelbase were fitted on third class and first class coaches, dining cars or saloons respectively. The present practice for all new coaches incorporates a 10 ft. wheelbase bogie of rolled channel construction with improved springing arrangement. These bogies, together with the steel underframe, also of channel construction, are now built at Dundalk. Steel disc wheels are used. Corridor stock is used on practically all except local services, both side and central corridor types being in use. Dining or buffet cars are attached to all important trains enabling passengers to have full meals or light refreshments *en route*. Gas cooking is provided, the gas being stored in high pressure cylinders carried underneath the dining cars.

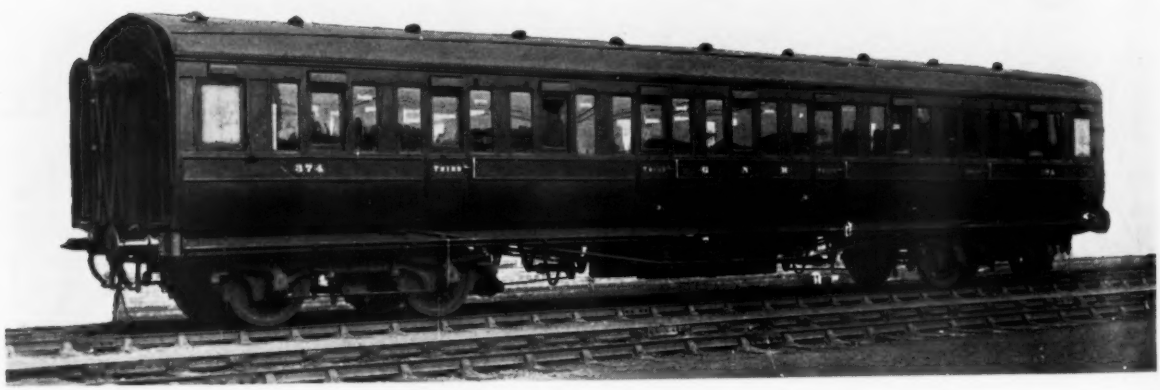
Teak framing and mahogany panelling have been used

Amiens Street station, Dublin

Great Victoria Street terminus, Belfast

THE IRISH INTERNATIONAL MAIN LINE

Express train headed by 4-4-0 locomotive. Behind the engine will be noted a Travelling Post Office with mail pick-up apparatus



Third class coach seating 90 passengers

Standard modern restaurant car, built by the G.N.R. (I.) at Dundalk works, and used on the principal Dublin-Belfast international expresses

THE IRISH INTERNATIONAL MAIN LINE

for a large proportion of the stock with finishing in padouk, mahogany, and pine for the first, second, and third class compartments respectively. The most recent construction, however, includes apitong framing with finishes in walnut, mahogany and oak. Steam heating on the non-storage system is standard. Special ventilation is, however, used in addition on the latest first and second class main line coaches. All the carriage stock is fitted with electric lighting, a feature that the G.N.R. (I.) introduced in 1896.

The company also now operates six diesel-engined railcars, the first experimental cars having been placed in service in the latter part of 1932. These six cars have now run a total mileage of approximately 500,000 miles, and their use is being gradually increased on branch lines and for the lighter suburban services. The latest type seats 160 passengers in three classes. The rail bus type of railcar is also in regular service on branch lines. The units are of the usual 30-seater road bus type, but without the steering gear and with a straight front axle. The main feature is in connection with the wheels, where a special pneumatic and steel tyred type is used, and provided with effective safety devices which come into action automatically in the event of deflation of the pneumatic tyre. The system is patented by the company. As these buses can run in the forward direction only, a light type of turntable is installed at the necessary terminal points. They are in service on branch lines where traffic is too light to warrant the running of steam trains. They also make connection with main line trains where such connection was not previously provided.

The wagon stock consists of 5,503 units, 52 per cent. covered and 37 per cent. open, and the remaining 11 per cent. cattle and special types. Several 25-ton six-wheeled brake vans are used on main line goods trains. All wagons are built at Dundalk works. The construction is of the usual timber type, using oak for underframes and framing, and soft wood for the body sheeting. Steel underframes with steel body framing are in use for certain bogie covered wagons and four-wheel coal wagons. All new open and covered goods wagons are built to the Irish standard wagon design. The special wagons include one 40-ton bogie well wagon, twelve 30-ton bogie flat wagons, and two six-wheel glass wagons, all built of steel. The proportion of vacuum braked stock is only 5 per cent., as there is comparatively little fast meat or fish traffic.

Portadown, showing reinforced-concrete locomotive shed in the middle background

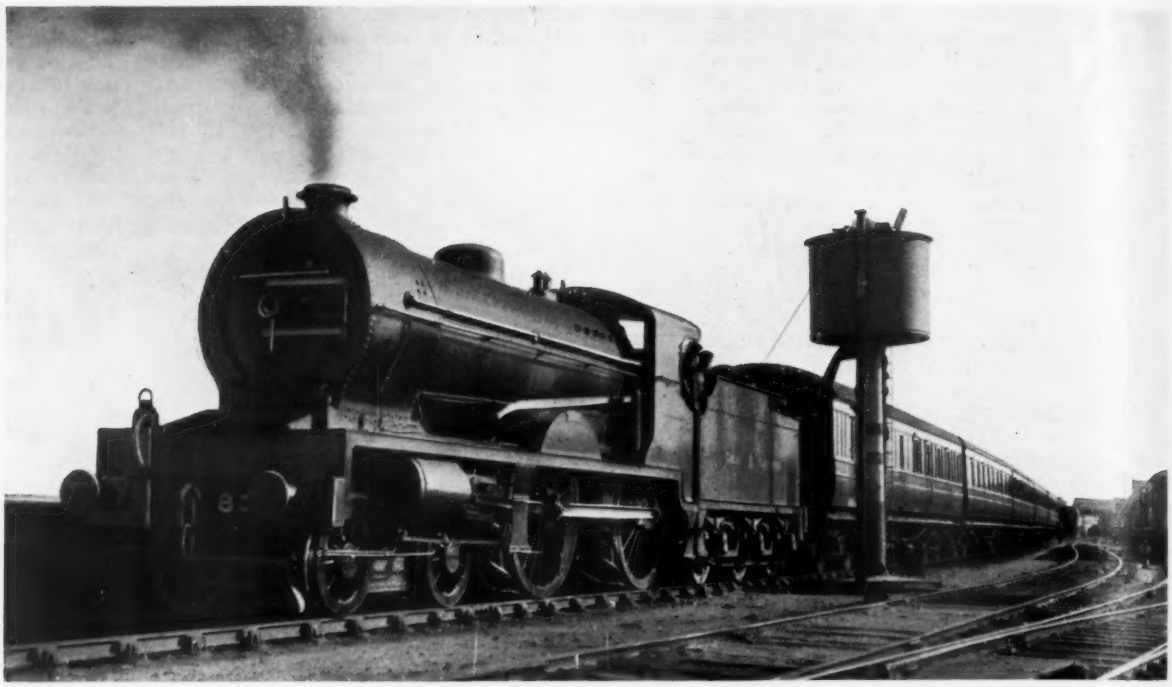
The Boyne Viaduct

The main line between Dublin and Belfast crosses the River Boyne at Drogheda, about 32 miles north of Dublin, on a viaduct which originally carried a double track and was opened for traffic in 1855. The structure is about 1,760 ft. in length, and consists of 15 semi-circular masonry arches, 12 on the south and 3 on the north side of the river, each of 60-ft. clear span, and 3 girder spans—2 of 141 ft. between bearings and 1 of 267 ft.—over the waterway, quays, and public road. The whole is supported on massive masonry piers, and the underside of the girders is 90 ft. above high-water level for the full width of the large span. The masonry throughout is of limestone of good quality, solidly constructed, and still in excellent condition. The original girders were of excellent design and construction with the exception of one detail, and, with a speed restriction and single line working, stood up to all traffic until about seven years ago.

This detail was, however, important, and the question of strengthening or renewing the viaduct, which became urgent early in 1930, hinged largely upon this point. The diagonal, or web, bracings were of uniform thickness, $\frac{5}{8}$ inches, and each was of suitable width, varying from $4\frac{1}{4}$ in. to $10\frac{1}{2}$ in., but their ends were housed in and riveted through the space between each pair of web plates. This space, where not filled by the ends of the web bracing flats, cover plates and packings, was left open in both flanges, and, as the clear space between the inner faces of the web plates varied from only $1\frac{1}{4}$ in. to $1\frac{1}{2}$ in. it was impossible satisfactorily to clean and paint the surfaces, with the result that serious corrosion had developed at such places.

About 25 years ago, an endeavour was made to overcome this defect in the lower flanges by filling the space with a mixture consisting largely of pitch, but owing to changes of temperature the results were far from satisfactory. In fact, the difficulties were actually increased as the space, though filled, was not made absolutely watertight. So that even partial cleaning and painting was rendered impossible. A detailed inspection of the structure revealed numerous places, especially in web plates originally $\frac{1}{4}$ in. thick only, where corrosion was extensive, and holes varying in length from 4 to 15 in. and about 12 in. in depth were found at several points. In addition to this the vertical plates of the flanges were at several places found to be badly laminated. Fortunately neither the corrosion nor the lamination was found to be serious at the points of maximum stress.

As the railway company intended to introduce on this section of line locomotives having axle loads of about 21 tons, as against the maximum permissible axle load of 17 tons over the viaduct, and, having regard to the age and condition of the wrought-iron structure, it was resolved in the autumn of 1929 to prepare designs and invite tenders for repairing and strengthening the bridge. These designs were somewhat elaborate and very thorough, but when tenders for the work were received from a very few of the more important firms of British and Continental bridge builders, it was found that the lowest worked out to about £70 a ton of total steelwork to be supplied and fixed, and



Dublin-Belfast express, headed by 4-4-0 compound No. 83, "Eagle," at Dundalk, G.N.R.(I.)

as this quantity was about 500 tons, it was considered that the strengthening scheme was altogether too costly, and likely to be more than for regirdering the bridge entirely, retaining the single-line idea by interlacing the tracks.

Thus it came about that in the spring of 1930 designs for a new structure were prepared and tenders were invited during the summer on the basis of detailed drawings, a specification and schedule of quantities. The number of firms asked to tender was increased, but all the British firms who had tendered for the earlier proposals were also given an opportunity of quoting for the new proposals. As had been anticipated, the lowest tender now submitted was such that, after adding the estimated cost of certain excluded works, intended to be carried out by separate contract and by the company, the total cost of the new proposals was substantially below that of the old. Accordingly, the contract for a new superstructure was awarded in September, 1930, the contractors agreeing to complete the work, including the removal of the old bridge, within 9 months of the date on which the detailed workshop drawings were finally approved.

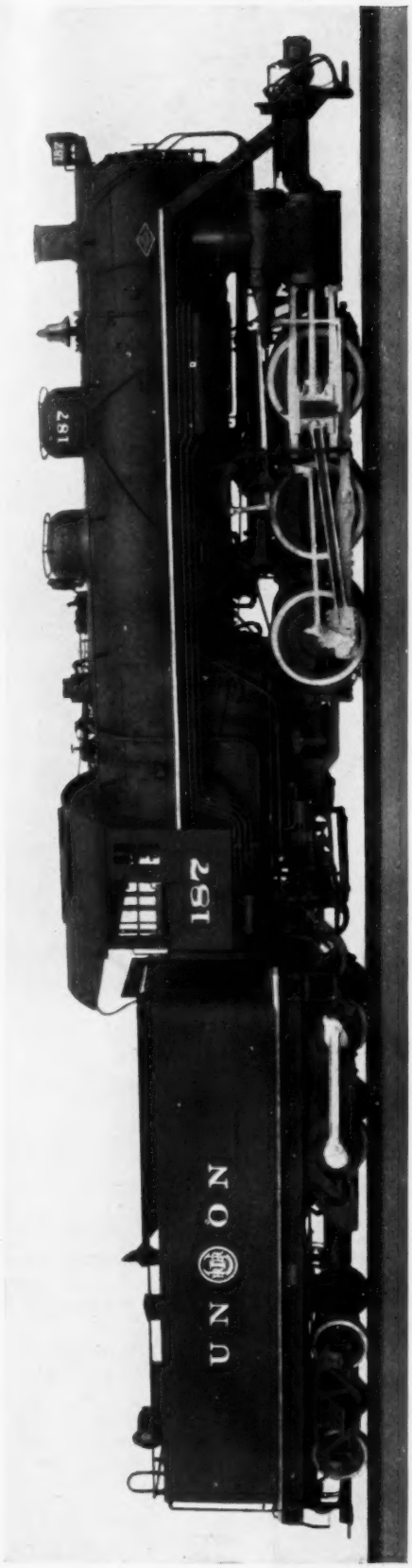
The design for the new structure calls for few comments. The girders were proportioned for 18 units British Standard Loading, in conformity with the requirements of the Irish Free State Minister of Industry and Commerce and the British Standard Specification for Girder Bridges (1923). To some extent the designs were governed by the necessity for building the new structure within the limits of the existing bridge while carrying traffic. The expansion arrangements are somewhat unusual, but it was thought desirable to perpetuate those of the old structure, as far as possible, and this accounts for the fact that the three new spans are bolted together on the neutral axes of the lower chords of the main girders.

The main girders of the large span were designed to take account of the secondary stresses, in accordance with the specification, but, in fabricating them in the workshops, these stresses, due to about 75 per cent. of the dead load, were eliminated. The presence of the old structural work determined the position of the panel points which had to be so selected as to permit of practically all the new cross girders being placed in position between the old ones. Apart from the old cross girders immediately over the piers and abutments, which had to be removed in the first instance to permit of the distributing joists and grillages for the bearings to be placed into position, only three old girders fouled the new ones. For obvious reasons, three simply supported spans were used and from aesthetic considerations the upper chord of the centre span was given the appearance of being well-curved, while sloping end posts were avoided for the same reason, and in order to facilitate erection by cantilevering one span from that next to it.

(To be continued)

Indications for Level Crossing Warnings

In recent years a great many level crossings in certain European countries and in America have been fitted with automatic signals of various kinds, the flashlight type, in which red flashing lights are shown when a train is approaching, being very popular. Some attention has lately been directed to the question whether a "clear" as well as a "warning" signal is desirable from the road driver's point of view. In some countries, such as Germany, where it has been adopted as standard, a flashing white light indicates that the railway is clear, a red one—flashing at a much faster rate—that a train is coming. In America, generally speaking, no light is exhibited normally, but the use of the traffic type of signal at some places has led to favourable comment by road users, who say that the "clear" light emphasises the approach to a point of potential danger, and that they must be prepared for the warning to appear. Such a signal, however, consumes power all the time, and this is no doubt a reason why it has not been adopted in some countries. Occasionally the lights are provided by compressed gas, after the manner of buoys and other navigation warnings, the control alone being electrical.



General view of new 0-6-0 type shunting locomotive with booster-driven tender, Union Railway, U.S.A.

NEW 0-6-0 TYPE U.S.A. SHUNTING LOCOMOTIVES

These have recently been delivered by the Lima Locomotive Works Inc.

THE Lima Locomotive Works Inc. has recently delivered to the Union Railway Company five shunting locomotives of the 0-6-0 type, with eight-wheeled booster-driven tenders. Although these engines are considerably lighter and more simple than the very large 0-10-2 type locomotives built by the Baldwin Locomotive Works for the same company, illustrated and described in THE RAILWAY GAZETTE dated September 11, 1936, they are, nevertheless, powerful and interesting engines. Inasmuch as there are no carrying wheels, the whole of the weight of the engine itself is available for adhesion, and with cylinders 22 in. dia. by 28 in. stroke, coupled wheels 4 ft. 3 in. dia., and boiler pressure 220 lb. per sq. in., the engine develops a tractive effort of 49,690 lb. with the main cylinders alone in operation, and 64,190 lb. when the booster engine is working.

As the illustration shows, the cylinders are placed outside the frames and drive the trailing pair of coupled wheels. The fact that the wheelbase of the engine, as apart from the tender, is only 11 ft., readily adapts the type to easier negotiation of curves, whilst the fact already mentioned of there being no carrying wheels gives the engine full advantage, from an adhesion point of view, of its weight, which is approximately 90 tons, or an average of 30 tons an axle.

The boiler has a diameter of 6 ft. 0 in. It contains 179 2-in. tubes, and 28 superheater flues of 5½ in. dia. The length of the tubes and flues is 15 ft. 0 in. The heating surfaces are as follow:—

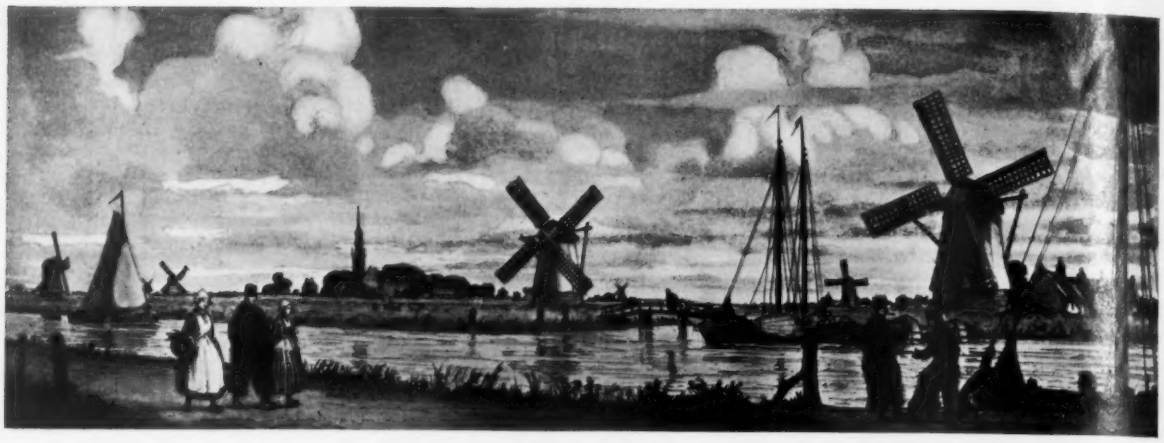
Firebox, syphons and arch tubes	230	sq. ft.
Tubes and flues	1,998	,,
Total	2,228	,,
Superheater surface	486	,,
Combined total	2,714	,,

The grate area is 50 sq. ft. The total wheelbase of the engine and tender is 51 ft. 0¼ in. The tender has a fuel capacity of 8 (U.S.) tons, and a water tank capacity of 8,400 (U.S.) gallons. The wheels of the leading, or booster-driven bogie, are 3 ft. 0 in. dia., and those of the trailing bogie 2 ft. 9 in. dia. The total weight of the engine and tender is 166 (British) tons.

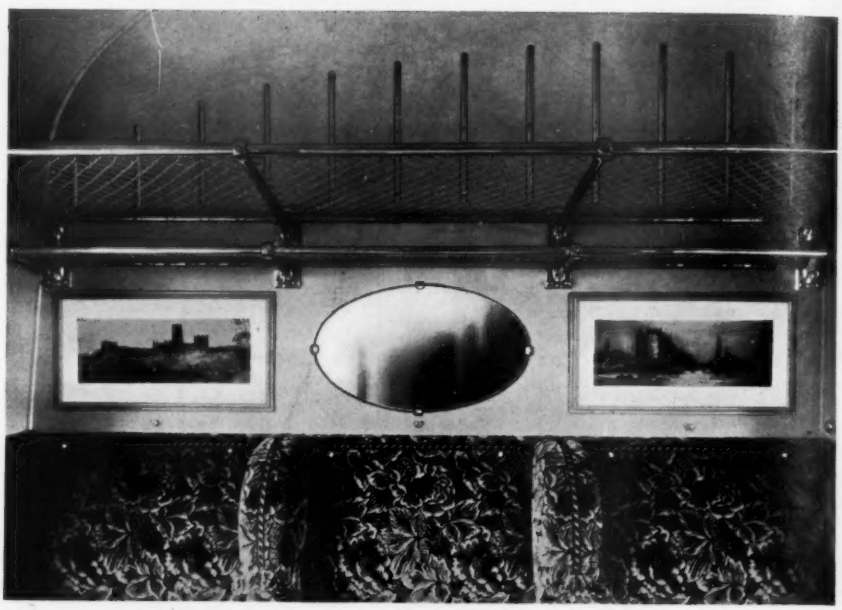
Rebuilding Baltimore & Ohio Freight Cars

Following the decision of the Baltimore & Ohio Railroad to embark upon an intensive scheme for the reconditioning and repair of 100 freight locomotives (referred to in our issue of October 23), comes the announcement that the company is undertaking the rebuilding on modern lines of 1,000 box cars. Work will be carried out at the shops at Cumberland, Keyser, DuBois, Chillicothe, and Washington, fifty men being re-employed at each point to deal with the first 300 cars. As soon as materials for the remaining 700 vehicles become available, further units of fifty will be recalled at all shops except Washington, where the services of a further hundred men will be required. Altogether, re-employment will be found for 550. As rebuilt, the cars will be of all-steel construction, corresponding in design to the lightweight alloy-steel freight cars built by the company last year. The bodies of these vehicles are streamlined, and the ribs are stamped out integrally, a method found to decrease construction cost, and add to carrying capacity, strength, and durability.

XUM



Above: "Holland via Harwich," an original coloured etching by Mr. Cyril H. Barraud, one of a series now decorating express trains on the L.N.E.R. (see article on page 765 and editorial note on page 740)



Right: Arrangement of views in a compartment (four are displayed in each). The Bakelite frames are coloured to harmonise with the scheme of decoration

Left: A film show in progress in the new L.M.S.R. cinema car for the technical education of staff. The vehicle is a converted sleeping car. (See editorial note on page 741)

RAILWAY NEWS SECTION

PERSONAL

The Rt. Hon. Lord Wigham, G.C.B., G.C.V.O., C.S.I., has been appointed a Director of the London Midland and Scottish Railway Company.

At the meeting held at the Irish Railway Clearing House on October 27, Mr. J. B. Stephens, General Manager of the Great Northern Railway (Ireland) was elected Chairman of the Irish General Managers' Conference for the year 1937.

INDIAN RAILWAY COMMITTEE OF INQUIRY

Mr. H. Cheadle, Chief Traffic Manager, South African Railways & Harbours, has been appointed by the Government of India to be a member of the Indian Railway Enquiry Committee in addition to Sir Ralph Wedgwood and Mr. W. A. Stanier.

Mr. Cheadle joined the South African Railways service at Pretoria as a clerk thirty-three years ago. In 1906 he was transferred to Johannesburg, his headquarters for fourteen years, with the exception of a few months served at Bloemfontein in 1909-10. He was appointed Senior Clerk in 1913, Principal Clerk in 1916, and Assistant Superintendent (Commercial and Operating) at Durban in 1920. Further advancement to Superintendent came in 1923, and to System Manager in 1930, the rank he held first at Kimberley and then at Pretoria. In December, 1933, Mr. Cheadle was appointed to his present position of Chief Traffic Manager at headquarters, Johannesburg. During the European war he saw service in South West Africa and East Africa, and was awarded the Distinguished Service Order and the Military Cross.

Mr. P. J. Chadwell, late General Passenger Agent in the European organisation of the Canadian Pacific Railway, whose tragic death we recorded in our issue of September 11, left estate valued at £5,229 (£3,972 net).

Mr. Willoughby Bullock has resigned his position as Deputy to the Chairman of Traffic Commissioners for the Yorkshire Area, and in his place the Minister of Transport, has appointed Mr. E. Russell Gurney to assist in dealing with applications from goods carriers for licences.

Mr. John Coleridge Patteson, who, in accordance with the announcement in our issue of October 2, succeeded Sir George McLaren Brown as European Manager of the Canadian Pacific Railway on November 1, was born in London, Ontario, on December 5, 1896, and thus attains this important position at an age of under 40. He was educated at the Model School, Toronto, and at Ridley College, St. Catharines, whence he entered the Royal Military College, of Canada, Kingston, Ontario. He served overseas with the Canadian Field Artillery from July, 1916, to September, 1919, first as a Lieutenant and later as Captain. Mr. Patteson was appointed Assistant Passenger Manager, Furness, Withy & Co. Ltd., New York, in the Bermuda and West Indies services of that firm before joining the Canadian Pacific Railway as Assistant General Agent at New York. Later he was appointed General Agent for the Passenger Department in Philadelphia, and afterwards General Agent for the Steamship Department, first at Chicago and then, in January, 1935, at Toronto. Less than a year ago he came to London as Assistant to Sir George McLaren Brown, whom he now succeeds as European Manager.

Mr. J. C. Patteson,

Appointed European Manager, Canadian Pacific Railway

The directors of the London Midland & Scottish Railway have approved the appointment of Mr. H. A. Hooks, Assistant District Passenger Manager, London, to the newly-created post of District Passenger Manager, Leeds. In order to bring about a closer contact with the public in this important area, it has been decided to establish a separate district to cover passenger commercial work for 154 L.M.S.R. stations in the Leeds area, including such important places as Bradford, Dewsbury, Halifax, Huddersfield, and Wakefield. The new Leeds District has hitherto been included in the area supervised by the District Passenger Manager, Manchester. Pending the completion of new offices at Leeds (Wellington and New station), the new District Passenger Manager and his staff will be located at 15-17, Lower Briggate, Leeds.

From the *London Gazette* of October 30: Territorial Army; Royal Engineers, Engineer & Railway Staff Corps:—

Lt.-Col. E. C. Cox, C.B.E., M.V.O., T.D., resigns his commission and retains his rank with permission to wear the prescribed uniform. (October 31.)

Major E. J. Missenden to be Lieutenant-Colonel (October 31).

Lt.-Col. Cox has just retired, and been succeeded by Lt.-Col. Missenden, as Traffic Manager, Southern Railway.

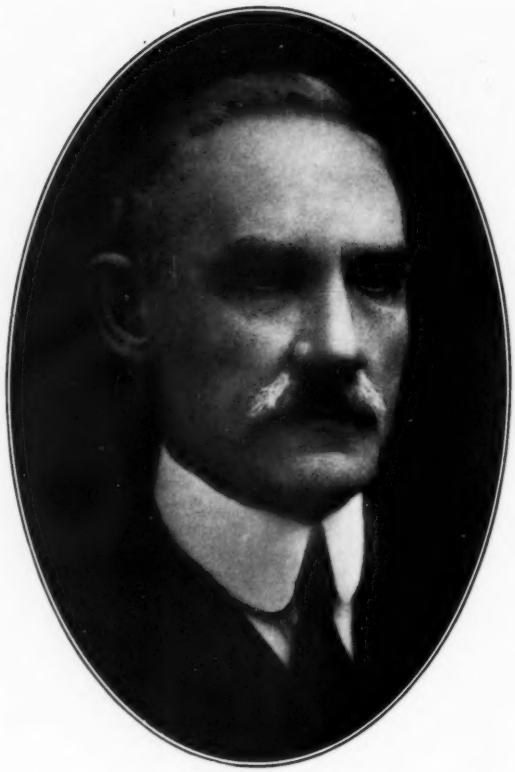
Mr. Lewis Chapman has resigned from the board of the Birmingham Small Arms Co. Ltd., owing to his whole time being required by the greatly increased activities of the Steel Companies of the B.S.A. group. (He is Managing Director of William Jessop & Sons Ltd., and J. J. Saville & Co. Ltd. both controlled by B.S.A. Ltd.)

The following appointment is announced by the Great Western Railway:—Mr. E. W. Higginson, Chief Clerk, Claims and Salvage Department, Chief Goods Manager's Office, Paddington, to be Claims and Salvage Agent, Paddington, in succession to Mr. J. G. McBryde, who has retired.

We regret to announce the death, on October 30, of Mr. L. E. H. Yates,

sometime Chief Mechanical Engineer, North Western Railway of India, in his 81st year.

We regret to record the death, on October 31, of Sir Henry Burt, K.C.I.E., C.B.E., sometime President of the Indian Railway Board, and Government Director of Indian Railways, also until July, 1935, Chairman of the Bengal & North Western Railway, and until his death, Chairman of the Rohilkund & Kumaon, and Bengal Dooars Railways, and a Director of the Bombay Baroda & Central India Railway. Sir Henry was born in 1857, was educated at Clifton and trained at the Royal Indian Engineering College, Coopers Hill. He gained practical experience on the former L.N.W.R., and went out to India as an Assistant Engineer in the Railway Branch of the Public Works Department in 1879; he was promoted to be Executive Engineer in 1892. After wide and varied secretarial, operating and administrative experience, he was appointed Deputy Manager of the North Western Railway in 1901, Manager of the Oudh & Rohilkhand Railway in 1902, and of the Eastern Bengal State Railway in 1906, and Agent —the then new designation in place of Manager—of the North Western system in 1907. He

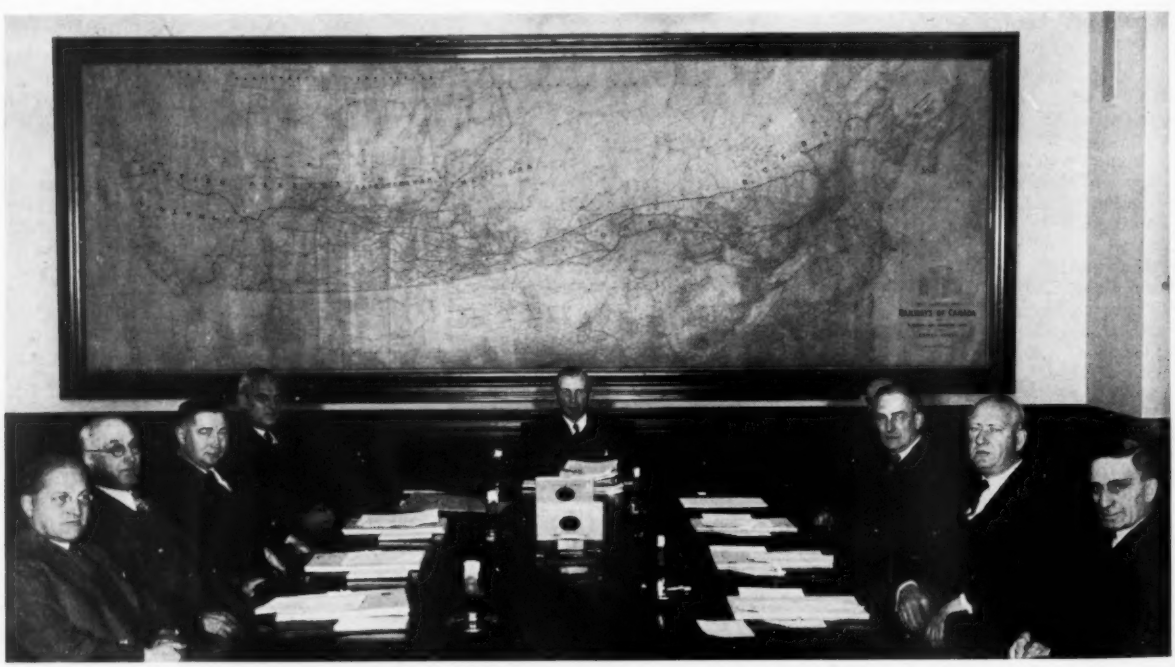


The late Sir Henry P. Burt, K.C.I.E., C.B.E.,

Sometime chief executive officer of three State railways and President of the Indian Railway Board, also chairman of four company-worked lines

was elected President of the Indian Railway Conference Association in 1910. In 1912 Sir Henry was selected as a temporary additional Member of the Railway Board, and later became an ordinary Member. For a short time prior to his retirement, in 1915, he was President of the board, and a Member of the Legislative Council. On leaving India he was at once appointed Government Director of Indian Railway Companies at the India Office. For distinguished services as representative of the Secretary of State for India on the Priority Committee of the Ministry of Munitions, he was awarded the C.B.E. in 1918, and thereafter became Chairman and Director of the various railway companies as mentioned above and also Chairman of the former Delhi-Umballa-Kalka Railway; he had been made a C.I.E. in 1909 and a K.C.I.E. two years later. Sir Henry was a member of the Secretary of State's Committee, appointed in 1933 to frame the scheme for the Statutory Railway Authority for India, and was one of the most experienced administrators Indian railways ever had.

We regret to note the recent death of Herr Hippolyt Saurer, of the well-known firm of motor and diesel-engine builders bearing this name at Arbon.



The new board of directors of the Canadian National Railways sitting in the board room, McGill Street, Montreal. Left to right: Mr. H. J. Symington, K.C., Mr. R. J. Moffat, Mr. Wilfred J. T. Gagnon, the Hon. C. D. Howe, Minister of Transport in the Federal Government, Mr. S. J. Hungerford, Chairman, Mr. J. Y. Murdock, K.C., Mr. D. H. McDougall, and Mr. B. L. Daly. Mr. Howe was present to meet the members of the board at their organisation meeting

(Switzerland), which took place in a clinic at Vienna, at the age of 58.

L.N.E.R. Appointments

The London & North Eastern Railway announces the following appointments:—

Mr. J. E. Kitching, District Goods Manager, Newcastle, to be Portmaster, Grimsby, in succession to Mr. E. M. Rutter, recently appointed Passenger Manager, North Eastern Area.

Mr. H. F. Sanderson, District Superintendent, Cambridge, to be District Goods Manager, Newcastle, in succession to Mr. Kitching.

Mr. O. F. S. Bender, Acting District Engineer, Norwich, to be District Engineer, Norwich.

Mr. T. F. Cameron, Assistant to the Divisional General Manager, North Eastern Area, to be Assistant Divisional General Manager, North Eastern Area.

Mr. H. Arnott, Chief Assistant to the Superintendent, Southern Scottish Area, to be Assistant Superintendent, North Eastern Area, in succession to Mr. A. Collinson, who will retire from the service on November 26.

The Institution of Locomotive Engineers

At the general meeting of the institution held on October 28, the following candidates were recommended by council for election:—

Members

Mr. J. St. J. Coleman, Deputy Chief Mechanical Engineer (Power), South Indian Railway.

Mr. A. W. M. Mawby, Assistant Mechanical Engineer (Maintenance), London Passenger Transport Board.

Mr. R. A. Riddles, Principal Assistant to Chief Mechanical Engineer, L.M.S.R.

Associate Members

Messrs. C. R. Grey, North Western Railway, India; D. S. E. Gudgin and J. W. W. Richards, Everett & Harle, Essen, Ruhr, Germany; H. Manoli, Egyptian State Railways; and Sri Rajangam, South Indian Railway.

Mr. A. Kuit, Chief Railway Commissioner, South African Railways & Harbours, is now on a tour overseas to investigate railcar development.

Mr. W. A. Moyers, Chief Civil Engineer, S.A.R. & H., was expected to resume his duties on October 3, after return from leave during which he visited London.

Lord Banbury of Southam, sometime Chairman of the former Great Northern Railway, whose death we recorded in our issue of August 21, left estate valued at £281,608 (£209,849 net).

Brig-Gen. Sir Brodie Henderson, senior partner in Messrs. Livesey & Henderson, Consulting Engineers, whose death was announced in our issue of October 2, left estate valued at £263,716 (£254,670 net).

New L.N.E.R. High-Speed Trains

The L.N.E.R. has decided to introduce additional high-speed trains of limited capacity into the 1937 timetables. This decision has been reached in consequence of the marked success of the Silver Jubilee train, inaugurated a year ago, and of the further experiments which have since been made.

It is proposed to establish an afternoon service in each direction between London and Edinburgh, timed to do the journey in 6 hr. This compares with the present quickest time of 7 hr. 15 min. by the non-stop Flying Scotsman. Connections will be made with Dundee and Aberdeen, and the only stop between Edinburgh and London will be at Newcastle, which will thus be provided with a second 4 hr. service to and from London, in addition to the Silver Jubilee. By the King's permission the new train, which is to start next July, will be named Coronation.

In the autumn another high-speed service will be established, between the West Riding and London. The train, which will start and finish at Bradford, will run without stop between Leeds and London. It will be timed to do the journey between Leeds and London in 2¾ hr., compared with the present quickest time of 3 hr. 10 min. The times of arrival and departure will be so arranged as to give business men of the West Riding ample time to transact business before leaving, spend a full afternoon in London, and reach home the same day at a reasonable hour. (*See editorial on page* 742.)

The new trains will be streamlined throughout as is the Silver Jubilee, but certain improvements in design and layout will be adopted. As before, the trains will be limited in capacity, in order to keep down weight, and a small supplement will be charged. Their introduction into the timetables will necessitate certain modifications of existing services, to be announced in due course, but it is not expected that these will cause any inconvenience.

L.N.E.R. Athletic Association

The Hon. Rupert E. Beckett, a Director of the London & North Eastern Railway, and President of the L.N.E.R. Athletic Association (G.N. Section), took the chair at the 39th annual dinner and dance and presentation of challenge cups, held at the Abercorn Rooms, Great Eastern Hotel, last Friday evening. Those present included:—

Sir Ronald W. Matthews, Sir Gerald Talbot, and Major W. H. Carver, M.P., Directors; Sir Nigel Gresley, Chief Mechanical Engineer; Messrs. A. P. Ross, Stores Superintendent; James McLaren, Secretary; O. Bulleid, Assistant to Chief Mechanical Engineer; P. J. Dowsett, Assistant Secretary; O. H. Corble, Assistant to Chief General Manager; W. R. Mole, Assistant Solicitor; R. J. M. Inglis, Assistant Engineer; J. C. L. Train, Assistant Engineer (Maintenance); T. F. Day, District Goods Manager, Sheffield; H. S. Owen, District Goods Manager, Manchester; T. H. Seaton, District Engineer, Stratford; A. J. Grinling, District Engineer, Peterborough; C. F. Slade, District Engineer, King's Cross; Dr. C. Grant MacMahon, Medical Officer; Messrs. L. Stone, Hon. Secretary, Athletic Association; G. B. Lissenden; G. F. Thurston; R. O. J. Dallmeyer; A. J. Brickwell; F. Downes; G. J. Woodhouse; and Tom Smith.

Mr. G. B. Lissenden, Traffic Manager, Lever Brothers Limited, Port Sunlight, proposed the toast of "The London & North Eastern Railway." He said he had recently attended a congress at Brighton of the Commercial Motor Users' Association and had not felt particularly flattered when he heard one lady explain to another why the hotel was full, "Oh, some lorry drivers are having a meeting." As a large buyer of all forms of transport he deplored the present conflict between railways, road transport, and coastwise shipping, and hoped that some form of co-ordination would be effected. In conclusion he paid a tribute to the efficient manner in which the L.N.E.R. handled the very large amount of traffic his firm entrusted to it.

Major W. H. Carver, M.P., in responding, first expressed the disappointment of Mr. Whitelaw that, owing to an accident he had recently sustained, he was unable to be present. As they all knew, he was beloved by his colleagues and devoted nearly his whole time to the railway, and took the greatest interest in all welfare services. Mr. Lissenden in proposing the toast had paid a tribute to the efficiency of the L.N.E.R. without any suspicion of soft soap. Naturally he would like even cheaper rates, but their shareholders, who had provided the capital to build and equip the railway, were also entitled to some consideration. Theirs was the second largest corporation in the world. For some years past they had had to effect great economies, but were now spending more to keep abreast of improving conditions. They had over 3,000 motor lorries collecting and delivering. Regarding their passenger services, Sir Nigel Gresley's Silver Jubilee had become the most famous train in the world. Without divulging any secrets he intimated that it might be the precursor of similar trains to other important centres on their system. Major Carver concluded his speech by reciting some aphorisms, of which the following are three typical examples: "Many a false step is made by standing still"; "A crank is a little thing that makes revolutions"; "A man wrapped up in himself makes a very small parcel."

Sir Ronald Matthews proposed the toast of "The L.N.E.R. Athletic Association." Mr. Beckett replied and then presented the challenge cups to the prizewinners for the 1936 season. The room was then cleared for dancing, which occupied the rest of the evening.

XUM

Railway Safety

A survey of development formed the subject of a recent paper by Mr. George Mills, Divisional General Manager, Scotland, L.N.E.R.

Addressing the Scottish Section of the Institute of Transport in Glasgow on October 19, Mr. George Mills, Divisional General Manager, Scotland, L.N.E.R., took as his subject "Safety Measures on Railways." Safety first, he said, was not a craven desire to avoid danger, but an attitude to life compatible with the taking of risks—an essential condition precedent to all action.

In the early days of railways the simple precaution was taken of separating trains by a time interval, though this provided no positive safeguard, and the responsibility rested with the trainmen to stop clear of unexpected obstructions. Between 1850 and 1870 the block system, made possible by the invention of the electric telegraph, was introduced, and enabled a signalman at one station to ascertain whether the preceding train had reached the next before allowing a second train to leave. Trains were thus separated by a space interval, which was also a varying time interval, depending on the time occupied by the various trains in passing through the sections into which the line was divided. With the introduction of the block system it became general to assume the line blocked and to maintain the signals at "danger" until the signalman ascertained if the section ahead was clear. Curiously enough, with the installation of modern automatic signals the pendulum has swung back to the original normal "clear" aspect. But the important point to note is that the block system brought with it the final stage in the transfer from the driver to the signalman of the responsibility for ascertaining the state of the line ahead. There had been introduced, successively, the policeman, the fixed signal, the time-interval system and the block system.

Interlocking

As traffic developed and junctions and stations became more complicated, levers working points and signals were grouped together in a signal box, but there was nothing to prevent a clear signal being shown with the points incorrectly set until interlocking provided the solution. The first successful grouping and interlocking of points and signals was carried out at Bricklayers Arms, London, in 1856 by John Saxby. The concentration of point and signal levers brought with it new elements of danger, since when points were worked by levers fixed close to them on the ground the chances of the blades not being firmly home, or of the points being moved while a train was passing over them, were not so great as with the levers located in a signal cabin some distance away. So the facing point lock and locking bar were introduced. The former ensures that not only are the points firmly home against the stock rail in either position, but that any movement of them is prevented until it is withdrawn. Further, by means of interlocking in the signal cabin, the signal protecting the facing points cannot be lowered until the lock has been operated. To ensure that the signalman does not withdraw the lock and move the points when a train is passing, the locking bar is provided, worked by the same lever as the facing point lock. With a break in the point rodding, however, the points would not answer the lever and, although properly locked, would be lying in the wrong position for the movement indicated by the signal. Hence the detector lock, the main idea of which is to prevent the pulling of the signal wire should the points be out of adjustment.

Development of Signalling

After mentioning such safety devices as fouling bars, catch points and runaway points, Mr. Mills examined some of the subsequent developments in the signal. Lack of uniformity characterised early signalling, and it was not until about 1870 that the semaphore was in fairly general use. For many years the "clear" signal was given at night by a white light, but the risk of mistaking other white lights led to the adoption of red and green as the standard colours for "stop" signals.

Although railways, as first understood, included a track, locomotives, wagons and carriages, a signalling system was not contemplated. But since a train is confined rigidly to the track and its momentum necessarily such that some distance must be covered before it can be brought to a stand, the interests of safety called for the introduction of an outside factor in the form of signalmen to whom the responsibility could be delegated for seeing that the line was clear and that at points the correct route was set. The working regulations of the signalling system have been built up on safety first, that is plain commonsense lines.

Dealing with the influence on safety of the permanent way, Mr. Mills said that before safe high-speed operation can be made practicable, the performance of the rolling stock must be ascertained by practical test; the Hallade recorder gives a printed record of the reaction between train and track, and the record shows those places on the line which need some modification to make the stock ride smoothly at high speed. To ensure safe travel, curves must be superelevated, and provided with suitable transition curves at each end. In theory it might be possible to design all curves to provide a factor of safety at, say, 100 m.p.h., but at low speeds a train would tend to fall over to the inside of a short radius curve owing to the super-elevation which would be required. The permanent way engineer, therefore, determines the maximum superelevation which can be applied to allow of safe running at low speeds with heavy trains, and then decides the maximum speed at which the curve may be negotiated to allow a factor of safety at high speed. In this way, in the interests of safety, speed restrictions come into existence.

Apart from the contribution to safety of the continuous brake, much had been done by improved design of the rolling stock itself. Better springs were designed, and tyre fastenings were produced which retained the tyre on the wheel rim in the event of breakage. Wheel and tyre fractures were a fertile source of accidents at one time before science made possible the commercial production of steel with sufficient strength to withstand the wear and tear of railway work. Mr. Mills also referred to the prevention of telescoping by means of the buckeye coupling, introduced on the East Coast stock in 1900 and adopted by the L.N.E.R. after grouping in 1923.

Influence of Electricity

It would not be over-emphasis, continued Mr. Mills, to say that signalling is being revolutionised by the application of electric power. There are signal boxes in existence without any windows, but with track circuiting the operator knows exactly what is happening outside and can successfully regulate traffic which he never sees. Automatic operation of signals by electrical methods is now extensively employed, giving closer spacing of signals and consequent increased facility in providing, with safety, a more frequent train service. The outstanding example of this is found on the railways of the L.P.T.B. The four large group railways are gradually converting their termini to power operation, one of the latest examples being on the L.N.E.R. at Waverley station, Edinburgh, where five mechanically operated boxes have been displaced by a new box containing a 227 lever all-electric frame controlling multiple-aspect colour-lights and electrically operated points. Drivers also benefit from such developments, signal lighting being improved and confidence in running increased.

The Minister of Transport exercises control over the construction of the line, strength of bridges, clearances, loading gauge and mode of signalling. Similarly, through the Railway Clearing House Specifications, requirements and recommendations from the Minister govern the construction and maintenance of railway rolling stock. Equally important powers are held by him in regard to railway accidents, into which a formal enquiry may be held. The reports following these enquiries are circulated to the companies concerned, and are also available to the public in a publication entitled "Rail-

way Accidents," issued quarterly by H.M. Stationery Office. The meticulous care with which these investigations are made and the unbiassed manner in which the reasons for the accidents are assessed are a tradition with the Minister's inspecting officers.

The acid test of results applied to these manifold efforts shows that in 1935 one passenger was killed in seventeen and a half millions carried by the railways. The actual number of lives lost was 97, but it is significant that only 13 were caused by collision or derailment. The other 84 were due to such accidents as passengers falling from trains or platforms, boarding or alighting from trains in motion, or the opening and closing of carriage doors. This, Mr. Mills concluded, is a record of which to be proud and a standard which all must strive to maintain. Eternal vigilance is not only the price of liberty; it is the responsibility and the self-imposed duty of all who engage in the most fascinating of all activities —transport.

Coloured Etchings for L.N.E.R. Coaches

The London & North Eastern Railway is equipping new rolling stock for several important express services with a series of sixteen original coloured etchings by Mr. Frank H. Mason, R.I., and Mr. Cyril H. Barraud. The etchings can now be seen in the Flying Scotsman, the Silver Jubilee, and the Hook and Antwerp Continental; also in Liverpool—East Anglia, and Edinburgh — Glasgow — Aberdeen expresses. Other trains are at present being equipped. Subjects are as follows:—

By Mr. F. H. Mason: Lowestoft; Fountains Abbey; Scarborough; Durham; Western Highlands; Night Parade from Harwich; Bruges; the Rhine.

By Mr. C. H. Barraud: Cambridge; Felixstowe; Lincoln; Knaresborough; York; Edinburgh; Royal Deeside; Holland. We illustrate one etching, and the method of display, on page 760, and comment editorially on page 740.

The etchings measure 16 in. × 6 in., or 20 in. × 10 in. mounted, and arrangements have been made for copies to be supplied to the public at 10s. 6d. each, on application to the Advertising Manager, L.N.E.R., 26, Pancras Road, King's Cross, N.W.1.

We have before us specimens of two views by Mr. Barraud, designed for the attraction of potential visitors to Holland and to Lincoln by the L.N.E.R. routes. The Dutch scene, on which, in conformity with the principle adopted throughout the series, no more advertising matter appears than the discreet inscription "Holland via Harwich," is a very pleasing canal-side view, with figures in the national costume in the foreground and a windmill-dotted landscape beyond. The artist has given expression to the picturesque and peaceful elements that cause Holland to exercise so strong an appeal upon those normally condemned to more hectic surroundings. A few minutes study of this picture in the course of a journey should send the traveller hot foot to the enquiry office at his destination in search of particulars of the many reduced fare facilities offered by the L.N.E.R. for visits to the island of Walcheren (which has evidently inspired this etching) and the Dutch mainland.

The view of Lincoln from the river by the same artist is no less happy. Mr. Barraud's work is particularly attractive in its rendering of water and sky, and his pictures as a whole are restful to the eye and beguiling to the imagination.

Travel and the Contented Mind

Mr. Charles J. Hambro, Deputy Chairman of the Great Western Railway and a Director of the Bank of England, presided over a well-attended debate between the G.W.R. Lecture & Debating Society and the Bank of England Debating Society at Paddington station on October 29. A motion was proposed by the Bank of England Society "that travel is inimical to a contented mind." Messrs. J. H. McNulty and R. F. Thomas were the principal speakers on the Bank side, and Messrs. S. B. Taylor and H. G. Bowles for the Great Western society.

The main argument advanced on the affirmative side was that although travel is generally pleasant (and tribute was paid to the railways for their contribution to that result) it is not a satisfying experience. The sight of beautiful scenery or magnificent buildings in other countries or remote parts of one's own, excited a desire either for repeat visits or further travel.

On the other side it was contended that travel had in it the element of adventure, and was an educative and pleasure-giving experience; both the wider knowledge and the pleasant change derived from travel conduced to the best sort of contented mind. Other points made in the course of the debate were that a good deal of travel was of a purposeful kind, and the achievement of the object of travel led to mental satisfaction; that journeys to parts of the country and the world where people are unhappy and distressed could not lead to contentment in any well-disposed minds; that there was a kind of travel that was a concomitant of business, and that experience showed this to be consistent with contentment of mind—for example a travelling salesman was at least as contented as a stores salesman, and a passenger guard as a porter. It was also said that true contentment of mind was something far removed from the smug satisfaction of ignorant and unreflective people, whose state was sometimes all contentment and no mind. The vote went in favour of the motion.

Staff and Labour Matters

New Claim by the A.S.L.E.F.

As was forecast in our issue of October 16, the Associated Society of Locomotive Engineers and Firemen, following failure to agree at a joint meeting with the Railways Staff Conference, referred to the Railway Staff National Council its proposals for varying the national agreements and decisions with regard to the remuneration and conditions of service of engine drivers, motormen, firemen, assistant motormen, and engine cleaners. The proposals, which are very far reaching in their effect, include one for the establishment of a six-hour day. A meeting of the council was held in London on Wednesday last, November 4, when the proposals of the Associated Society were carefully considered but no agreement was reached, and the Railway Staff National Tribunal will now be asked to hear and decide the issues in dispute.

If this course is adopted the trade union will agree terms of reference with the railway companies, and, within seven days thereafter, will submit to the companies a written statement setting out the main arguments in support of the claim, all the material facts and the documents relied upon. Within fourteen days the companies will be required to prepare a written statement setting out the main arguments in opposition to the claim and the union will then forward the statements of claim and defence, together with the agreed terms of reference, to the tribunal, with a request that the tribunal hear the parties on a date or dates to be agreed, probably not this month.

Staff on Diesel Rail Units

An international conference, held in Paris last week under the auspices of the International Transport Federation, discussed the rates of pay and conditions of employment of staff operating diesel rail units. It was urged that two men should work on each of the units and that wages and general conditions should be the same as on steam locomotives. Questions of health and public safety were also considered. It was stated that delegates were present from ten countries. Mr. Marchbank, General Secretary, N.U.R., presided.

Hours of Road Motor Drivers

The Associates' Committee of the British Road Federation has made an application to the Minister of Transport for an Order varying the hours of drivers of "C" vehicles during the 1936 Christmas trading period. The application is for an Order permitting on not more than two days in each of the three weeks ending on December 19 and 26, 1936, and January 2, 1937, the substitution of the limit of 12 hours for the limit of 11 hours imposed by Section 19 (i) (ii) of the Road Traffic Act, 1930. The application has been referred to the Industrial Court for hearing on Wednesday, November 18.

XUM

Railway and Other Reports

Brazil Railway Company.—In accordance with notice given, the variable interest for the year 1935 on the 4½ per cent. (now 5 per cent.) first mortgage 60-year (international series) gold bonds of the Brazil Railway Company has been payable on and after November 4, 1936, at the Bank of Scotland, 30, Bishopsgate, E.C., as follows:—English issue: for each £200 bond £1 5s., for each £100 bond 12s. 6d., and for each £20 bond 2s. 6d. Belgian issue: for each bond of fr. 500 (£19 17s. 5d.) 2s. 5d.

Argentine Great Western Railway.—The report for the year ended June 30 states that under the working agreement the company received from the Buenos Ayres & Pacific Railway Company and distributed the following amounts in respect of the year: Interest on first and second debenture stock, paid January 1, 1936, and July 1, 1936, £136,000. During the year the company also received from the Pacific Company sums totalling £261,021, and, with the concurrence of the stockholders committee, therewith paid off the whole of the arrears of interest for three and a half years on the four per cent. second debenture stock, together with the interest accrued upon those arrears. A distribution of 2½ per cent. on account of the arrears of interest on the 5 per cent. debenture stock is to be made on December 1 next.

Metropolitan Assented Stock.—Glyn Mills & Co., the trustee and registrar under the trust deed relating to the Metropolitan Assented stock constituted by the London Passenger Transport Act, 1933, announces that a final interest payment at the rate of 2¼ per cent. (less income tax) on such assented stock (making, together with the interim payment of 1 per cent. on April 14, 1936, the full interest rate of 3¼ per cent. for the year ended June 30) will be made to holders registered on November 6. Warrants will be posted on November 21, 1936.

Diesel Railcar Orders

Walker Bros. (Wigan) Limited has received a further order from the Peruvian Corporation for a large diesel railcar arranged to operate between sea level and 15,800 ft. This car consists of two Walker dual-directional isolated and detachable power bogies situated at each end of the car with the central pivot positioned in such a manner as to give the best adhesion to each driving axle. Special provision has been made to enable the Gardner 102-h.p. engines to develop their nominal horse-power throughout the variation in altitude. This order follows on that placed by the Peruvian Corporation in February last with Walker Bros. (Wigan) Ltd. for a 60-seat, 100-h.p. uni-directional railcar which actually entered service in August and is now doing 250 miles per day seven days per week. The performance of this car has fulfilled every expectation and what is particularly interesting is that the riding of the car has emphasised the salient asset of the Walker system of isolating the power bogie from the coach underframe. This allows the power bogie free movement for accommodating itself to the irregularities and curves of the track without transmitting these movements to the passenger coach and this advantage is particularly emphasised with bad track conditions. The vehicle in question has shown itself admirably designed for ensuring the maximum comfort to passengers under most trying track conditions, and the makers claim that all vibration noise and smell is precluded from entering the passenger compartment has been fully substantiated.

Walker Bros. (Wigan) Ltd. has also received a further repeat order from the Great Northern Railway (Ireland) for two twin-engine central power bogies. Each power bogie will develop 204-h.p. and will be mounted on two axles and equipped with two Gardner 6LW engines driving through hydraulic couplings and Cotal electrically-controlled epicyclic gearboxes. This new type of power bogie is a development of the original design of central power bogie and has the great advantage of making the best use of the available weight for adhesion purposes without resorting to coupling rods. As in all former cases, the Great Northern Railway of Ireland is building the coach bodies and underframes at Dundalk, and the capacity of each articulated train unit will be 164 passengers.

Belgian Locomotive Performance.—The Type 1 four-cylinder simple Pacifics of the Belgian National Railways (see The Railway Gazette, April 5, 1935) have shown themselves capable of developing continuously a drawbar-horsepower of 2,600 at 50 to 60 m.p.h. corresponding to 3,000-3,300 indicated horsepower. Trains of corridor stock weighing 700 tonnes (698 tons) have been hauled on the level at 75 m.p.h.

Avoidance of Level Crossing near Angmering, S.R.—A grant from the Road Fund has been made towards the cost of diverting the Littlehampton-Worthing road, where it passes through the districts of West Preston and Angmering. The existing road meanders from the south to the north side of the railway and the Roundstone level crossing, just east of Angmering Station, is a cause of much congestion and delay. To avoid the level crossing and provide a direct route from West Preston to Roundstone Farm, the West Sussex C.C. proposes to build a new road, more than a mile long, on the north side of the railway; the estimated cast is £28,000.

Forthcoming Events

Nov. 6 (*Fri.*).—Institute of Transport (East Midlands), at Guildhall, Nottingham, 6.30 p.m. Inaugural Meeting.

Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, 6 p.m. Thomas Hawksley Lecture: "The Spectroscope and the Atom," by Prof. A. Fowler.

Omnibus Society, at Inst. of Marine Engineers, The Minories, London, E.C.3, 7 p.m. "Function of the Small Proprietor as Exemplified in Wessex," by Mr. L. Nicholson.

Railway Students' Association (Edinburgh), at Goold Hall, St. Andrew Square, 7.30 p.m. "Railway Research Work," by Mr. T. Herbert.

Nov. 7 (*Sat.*).—Railway Convalescent Homes, at Wharncliffe Rooms, Hotel Great Central, Marylebone, London, N.W.1, 6.15 for 6.45 p.m. Family Dinner.

Nov. 9 (*Mon.*).—Institute of Transport (London), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 5.30 p.m. Annual General Meeting. "The Progress of the Southern Railway Electrification," by Mr. E. C. Cox, C.B.E.

Permanent Way Institution (London), at Southern Railway Staff Dining Room, Waterloo Station, S.E.1., 7 p.m. "Permanent Way Materials," by Mr. T. Preston.

Stephenson Locomotive Society (London), at L.N.E.R. Dining Club, King's Cross Station, N.1, 6.30 p.m. "F. W. Webb and his Locomotives," by Mr. F. Hambleton.

Nov. 10 (*Tues.*).—Institute of Transport (Birmingham), at Queen's Hotel, 6 p.m. "The Coasting Trade—Modern Development and Trend," by Mr. M. Robinson.

Institute of Transport (Nottingham Graduate), at Guildhall, 7 p.m. "Signalling as a Factor in Railway Safety," by Mr. H. Champness.

Permanent Way Institution (Guildford), at Orphanage Hall, Guildford Park, 6.45 p.m. "The Influence of Invention on Railway Development," by Mr. W. A. Willox.

Permanent Way Institution (Sheffield), at Royal Victoria Hotel, 7 p.m. "Maintenance Problems Appertaining to Permanent Way on the L.P.T.B. Railways," by Mr. H. Windmill.

Retired Railway Officers' Society, at Abercorn Rooms, Liverpool Street, London, E.C.2, 12.45 for 1 p.m. Luncheon.

Nov. 11 (*Wed.*).—British Railway Stockholders' Union Limited, at Gatti's Restaurant, King William Street, W.C.2, 1 p.m. Luncheon.

Diesel Engine Users' Association, at Caxton Hall, Caxton Street, London, S.W.1, 4.45 p.m. "The Application of Diesel Engines to Rail Traction," by Mr. T. Hornbuckle.

Institute of Welding (London), at Inst. of Mechanical Engineers, Storey's Gate, S.W.1, 6.30 p.m. "The Use of Welding in the Fabrication of Steel Plate Framework using Compressed Plate Sections," by Mr. E. Mopin.

Institute of Welding (Scottish), at Philosophical Inst., 207, Bath Street, Glasgow, 7.30 p.m. "Impressions of Welding in Germany," by Messrs. Dr. J. Orr and W. Heigh.

L.N.E.R. (Darlington) Lecture and Debating Society, at North Road Inst., 7.30 p.m. *Debate:* "That Signalmen do not Fully Appreciate the Driver's Problems." *Affirmative:* Messrs. C. Foster and J. Croft. *Negative:* Messrs. G. Henderson and S. Buckle.

Permanent Way Institution (Grimsby), at Church House, Bull Ring, 7.40 p.m. "Continental Railways," by Mr. W. A. Willox.

Permanent Way Institution (Newcastle), at Mining Inst., Westgate Road, 7 p.m. "The Question of Speed Restrictions and a Reference to some other Topics of Current Interest," by Mr. F. Harrison.

Nov. 12 (*Thurs.*).—G.W.R. (London) Lecture and Debating Society, in General Meeting Room, Paddington Station, W.2, 5.45 p.m. "The History and Functions of Railway Police," by Mr. G. Stephens.

Southern Railway (London), at Chapter House, St. Thomas' Street, S.E.1, 5.45 p.m. "The Railways of England," by Mr. H. Sparke.

MINISTRY OF TRANSPORT ACCIDENT REPORT

Stourbridge North Junction, G.W.R. July 17, 1936

The 9.50 p.m. goods train, Victoria Basin to Cardiff, was run into in the rear by the 11.30 p.m. auto train, Dudley to Stourbridge Junction. The driver of the auto train was fatally injured, the guard received minor injuries, and three passengers suffered from shock and bruises. The goods train of 36 wagons was hauled by 2-6-0 engine No. 8332. The auto train consisted of an eight-wheeled bogie coach, 32 tons, propelled by 0-4-2 tank engine No. 4853, 41 tons. The driver was in the leading end of the coach and controlled the throttle and vacuum brake on the coach wheels, with steam brake on the engine coupled wheels. The fireman, on the engine, could apply the steam brake independently. The coach had a timber body on steel underframe and was gas lit. Its leading end was wrecked, but the engine was undamaged. The goods brake suffered much minor damage although its main members stood up well. The night was fine and clear, with no moon. The accident occurred at about 11.50 p.m. Colonel A. C. Trench conducted the inquiry. The accompanying diagram shows the lines and signals concerned, with distances.

The goods train was accepted by Signalman Bonser, Stourbridge Junction North, at 11.43 p.m. He set the road and pulled off the signals for it to enter No. 2 up loop, as usual. Engineman Finch found the distant signal on and No. 2 loop home off, but was unable to see any light from No. 2 loop starting signal. Shouting to the signalman as he passed the box he was unable to attract attention; he blew his whistle and stopped a few yards from the signal at 11.47 p.m.; he could then see the arm was drooping, but no light. Thinking the points or signals were out of order, he sent his fireman to inform the signalman and obtain instructions. He was emphatic that not more than a minute or minute and a half had elapsed since stopping, and Fireman Hopcott supported this statement. Shortly afterwards, Finch, noticing the up advanced starter was off, and then the up starter also, concluded there was a defect in the points and that he was to go along the main line. He was unable to move until his fireman returned. Shortly after, the collision occurred, at 11.50 or 11.51 p.m. Guard Wilkes stated they had been standing for two or three minutes when he heard a noise, saw a light coming, and had just time to jump. He saw his side lamps alight after stopping and was satisfied that his tail lamp was also. He was unable to see the signals.

The auto train passed over the viaduct at normal speed, estimated by guard and fireman at 30 to 35 m.p.h., steam being shut off about half way across. Fireman Reynolds heard the driver whistle, saw the vacuum fall sharply, and felt the brakes go on; he applied the steam brake more rapidly but did not feel that speed was appreciably checked before the impact.

Signalman Bonser stated that after pulling off for the goods train to enter the loop, he saw the engine pass at the normal low speed. He had had some conversation immediately before with the driver of one of two engines changing crews on the down line and down loop siding, and tried to telephone a message for him to the Engine Shed box. He was unable to put it through, but while trying received a telephone call from a shunter to send one of the engines into the yard, and pulled off the signals accordingly. He then looked into the yard and saw a red light on the alignment of No. 2 loop, assumed it was the tail light of the goods train—actually on the up main in front of his box—gave " out of section," accepted the auto train, and pulled off for it. He was emphatic that the fireman did not reach him until after the collision, while Hopcott was equally emphatic that, having seen the main line signal off, he entered the box and asked " Is it all right for us to go main line?" and that the collision occurred before Bonser had time to answer. Other discrepancies of evidence lead Colonel Trench not to place much reliance on Bonser's recollection.

Inspecting Officer's Conclusions

Responsibility for this accident must be attributed to Signalman Bonser. There was evidence that a guard coming on duty had lit the tail and side lights of a van in the second siding beyond No. 2 up goods loop about 11.50 p.m., and it is reasonably probable that one of these might have been visible to Bonser, more or less on the alignment which would have been followed by a train entering No. 2 loop, but this cannot be regarded as an excuse for his failing to make certain that the goods train had passed in clear before giving " out of section " and accepting another train. He did not realise that the goods was not running at normal speed but was coming to a stand, nor did he notice it in front of his box for three or four minutes. The goods engine would have been almost on the direct line of sight into No. 2 loop. The message he tried to send was not urgent, nor was he unduly pressed by other movements. Bonser is 49, with 34 years' service, 29 as signalman and 11 in this box. He has a good record. It is difficult to understand how he can have permitted himself such a grave lapse.

There are no grounds for thinking that Driver Meredith of the auto train was not keeping a good lookout, or that he failed to take prompt action when he saw the tail lights; his range of vision would be very limited by curvature, and he was running under clear signals. No doubt the stop signal light was invisible and Finch acted correctly in doing as he did, though he could see the arm partially off. Assuming Hopcott's statement is correct, he must have left the engine within two minutes of its coming to a stand. The company's regulation lays down three

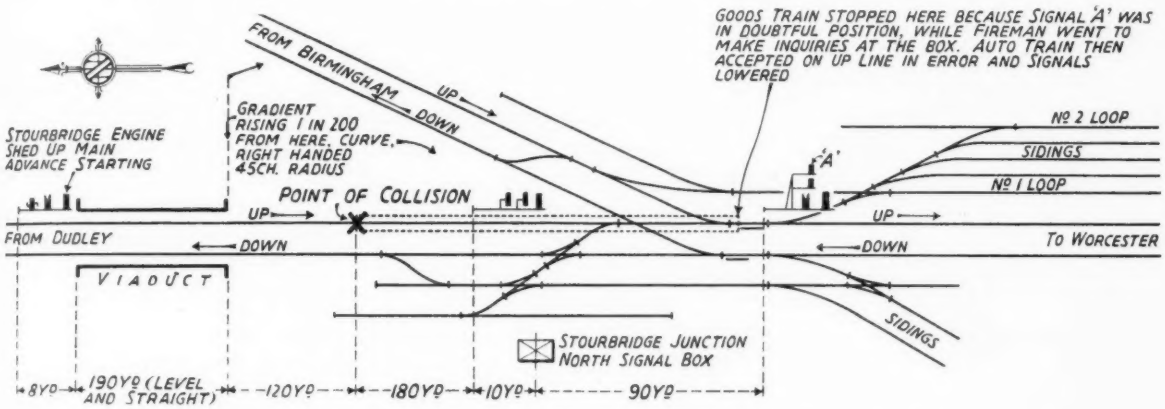


Diagram showing point of collision and lines and signals concerned

minutes in clear weather. There is no evidence this was exceeded, and neither Finch nor Hopcott can be blamed for the delay. But Finch should have whistled again immediately after stopping. This would have been strictly in accordance with rules, might well have drawn the signalman's attention, and avoided delay in sending the fireman.

Colonel Trench found that if the lever was pulled slowly the signal might not come off to the correct angle, and might well have failed to show a green light. The wire passes two sets of detectors, and such a defect is not uncommon, due to minor lack of adjustment of wires in changing temperature. Frequently a sharp pull will make the arm come off correctly. Bonser stated that about six weeks earlier he had complained about its working. Probably this was no more than seasonal variation, rectified without delay. About half-an-hour earlier two light engines had passed without question; he had given a normal pull for the goods. The line of vision from the box is somewhat on the skew; Bonser pointed out that it was not easy to see the light. The lamp was still burning properly the following morning.

Colonel Trench discussed the shape of the glasses in these siding signals, but agrees with the company's officers that the advantage of differentiation afforded by the small lights outweighs the risk of occasional obscuration due to the necessarily larger opaque sector between the red and green.

Closed Branch Lines—V

Great Western Railway

The fifth of our series of closed branch tables deals with the Great Western Railway. It will be recalled that this company at the time of grouping under the Railways Act, 1921, was constituted the group company and alone retained its pre-grouping identity. No railways approaching its then size and importance were taken over, as in most of the area concerned there were no competitive systems to be absorbed.

Only in South Wales were parallel railways acquired, and therefore it is in that area that most of the closures have taken place. In other parts of the system short sections have been closed to passengers, largely as the result of rail and road co-ordination with associated companies. It will be noticed that both the narrow-gauge lines of the G.W.R. have lost their passenger traffic, namely, the former Corris Railway (acquired by the G.W.R. in 1930), and the Welshpool & Llanfair light railway (taken over, with the Cambrian system, on grouping).

The previous tables in this series of closed branch lines were published in our issues of August 28, September 4, September 11, and October 9.

Section of Line (4 ft. 8½ in. gauge, unless otherwise noted under Remarks)	Passenger Service Withdrawn	Section Completely Closed	Remarks
Limpley Stoke to Hallatrow	September 21, 1925	—	—
Garnant to Gwaun-cae-Gurwen	June, 1926 ...	—	—
Old Hill to Halesowen ...	December 5, 1927	—	Open for workmen's trains.
Moreton-in-Marsh to Shipston-on-Stour	July 8, 1929	—	—
St. Blazey to Fowey	July 8, 1929	—	—
Rhymney (Lower) to New Tredegar	—	April 14, 1930	—
Cowbridge to Aberthaw ...	May 5, 1930	—	—
Plymouth to Yealmpton ...	July 7, 1930	—	Billacombe and Brixton Road stations closed to all traffic.
Cinderford to Drybrook halt	July 7, 1930	—	—
Bridport to Bridport West Bay	September 22, 1930	—	—
Blackmill to Gilfach Goch ...	September 22, 1930	—	—
Cymmer Corrwg to Glyncorrwg	September 22, 1930	—	—
Port Talbot to Tonmawr Junction	—	—	September 22, 1930, closed to goods traffic
Dinas Mawddwy to Cemmes Road	January 1, 1931	—	—
Machynlleth to Corris and Aberllefeni	January 1, 1931	—	2 ft. 3 in. gauge.
Rhos Junction to Rhos ...	January 1, 1931	—	—
Wrexham to Moss Platform ...	January 1, 1931	—	—
Croesnewydd to Berwig Halt	January 1, 1931	—	—
Aberystwyth to Devil's Bridge	—	—	Closed in winter only as from January 1, 1931
Abermule to Kerry	February 9, 1931	—	—
Welshpool to Llanfair Caereinion	February 9, 1931	—	2 ft. 6 in. gauge.
Coryton to Rhydyfelin halt	—	July 20, 1931	—
Congresbury to Blagdon ...	September 14, 1931	—	—
Maesteg (Neath Road) to Pontyrhyll	September 12, 1932	—	—
Pontypridd to Nelson (Glamorgan)	September 12, 1932	—	Open to goods traffic between Pontypridd and Cilfynydd.
Ystradgynlais to Colbren Junction	September 12, 1932	—	—
Wolverhampton to Stourbridge Junction via Wombourn	October 31, 1932	—	—
Dauntsey to Great Somerford	—	July 16, 1933	—
Port Talbot to Maesteg (Neath Road)	September 11, 1933	—	—
Swansea (Riverside) to Jersey Marine	September 11, 1933	—	—
Neath (Canal Side) to Court Sart	September 16, 1935	—	—
Swansea (East Dock) to Neath (Riverside)	September 28, 1936	—	Only intermediate stations closed.

New Gas Lighting Installation at King's Cross Goods Depot, L.N.E.R.

In view of the impending reorganisation of the King's Cross goods depot, the L.N.E.R. has recently replaced the lighting equipment in the outwards sheds with a modern installation which, in the case of the low-level shed, provides five times as much light as previously. The work has been carried out by the Gas Light & Coke Company.

On the high level, where daylight is relied upon until nightfall, the existing installation has been brought up to date and enlarged. On the low level, however, the 187 old pattern gas lamps have been replaced by 248 Littleton lamps manufactured by William Sugg & Co. Ltd. The new burners have been set at intervals of 21 ft. down the length of each loading stage. Thus there is a light approximately at the entrance of each truck or van. The illumination of the interior of the vehicles by these lights will enable loading and unloading to be speeded up. A feature of the installation is the even distribution of light, which permits far greater speed in the handling of freight and also promotes safety. According to present arrangements, the low-level shed, which now deals with traffic for stations south of Peterborough, is to be converted into the long-distance inwards depot.

RAILWAY AND OTHER MEETINGS

Buenos Ayres Western Railway Co. Ltd.

The annual general meeting of the Buenos Ayres Western Railway was held at River Plate House, Finsbury Circus, E.C.2, on November 4, Sir Follett Holt, K.B.E., Chairman of the company, presiding.

The Secretary (Mr. N. F. E. Grey) read the notice convening the meeting and the auditors' report.

The Chairman, in moving the adoption of the report and accounts, said that a few days ago at the Great Southern meeting he referred to the great loss they had all recently suffered at the passing of Sir Brodie Henderson, head of the firm of the company's consulting engineers, who had been for many years of great help to the company, and he now wanted to say how much they regretted also the death of Sir Hilary Leng, a member of the Local Committee in Buenos Aires. He held a distinguished and influential place in Argentine life, and whilst giving great service to the company endeared himself to all by his high character and charming personality.

With regard to the company's business, in all administrative and operating matters they worked jointly with the Great Southern. There had been some changes in the personnel during the past year. Mr. Roberts and Mr. Stuart, after a long period of good service, had retired on pension, and Major Loewenthal, having earned distinction in the railway world, had been appointed to assist Mr. Harris in the adminstration of the affairs of the two companies. Mr. Harris had completed with marked success his first year with the company, and they were grateful to him for the work he had accomplished, and for the fresh outlook on railway administration and for the enthusiasm that he had brought into his work.

Since the last meeting, the British railway companies operating in Argentina had taken the important step of forming an organisation through which by co-operative effort both here and in Buenos Aires they would strive to improve the position of the industry, and it was anticipated with all confidence that this arrangement would conduce to the common welfare. In London, by reason of his promotion to the Secretaryship of this new organisation, they had lost the good services of Mr. Robert Graham, who in his position as Secretary of the company had been for many years well and favourably known to the staff and the proprietors. To take Mr. Graham's place, Mr. Nigel Grey, who had been for a number of years Assistant Secretary of the Great Southern, and lately of the Western also, had been appointed Secretary of the two companies.

The report showed that the results of the previous year had been only slightly improved upon, owing to the effect upon the crops of a drought which had occurred at the critical moment. The year had proved a more than ordinarily anxious one, not lessened by the serious question of exchange. They were much indebted to their colleague Mr. Eddy, who during a nine months' stay in Argentina was not only able to assist in the settlement of many internal matters but to give material help in obtaining from the Government an exchange agreement for this calendar year, which after allowing for a rebate conceded on the maize tariff brought the company a relief which had helped, and was helping it, to weather a bad period. Owing to the failure of the cereal crops, there was not much business movement in the company's zone, but with cattle, which was an important item, the railway did satisfactorily, carrying 2,700,000 head, and the fruit and vegetable traffic from the irrigated Colonia Alvear zone gave a much better return. The joint working arrangement with the Great Southern had undoubtedly enabled the company to arrest the growth of expenditure and even to curtail it, and the economies made would have been much more evident in the accounts had it not been for the restoration of wage cuts under the President's labour award. This caused an additional labour charge of £100,000 at par of exchange as compared with the previous year.

Two outstanding difficulties remained to be faced, namely, the cut in exchange made three years ago, which meant the loss of 37½ per cent. of the company's net receipts; and road competition, which continued unabated. Roads were being improved or new ones made all the time, and buses and lorries using them had made it impossible for the company to maintain its old rates in many districts. All available local konwledge and experience had been concentrated upon the means to meet this competition, and experts from England and America had been employed to help with their advice. The railways were building up an organisation to add an effective service of road collection and delivery, but no general action could be taken, as it had been taken in the United Kingdom, until road transport came under authoritative control as it was here. At present in Argentina there was no such control. The only effective means that the company had of meeting this competition, which could not fortunately affect cereal traffic to any material extent, were tariff adjustments and improved services, but the position at present was wholly unsatisfactory, and would remain so until the necessary bill for transport control had passed the Senate, where it was now on the agenda for consideration.

In the meanwhile, main line trains were being speeded up, and diesel-driven passenger units for main and branch line work were being tried out with a view to largely extending their use. These diesel units offered an effective means of meeting in many districts the challenge of the road by giving more frequent services at higher speeds.

For the material increase needed in the general volume of business, they must look to the return of more normal crop seasons. Three years ago the Government fixed the minimum price of wheat at a figure which left a small margin of profit to the farmer, and today wheat was almost double that price. It was calculated that, apart from any contribution to the renewal fund, and if exchange and other conditions remained more or less as they were, the company would require a 5·25 per cent. increase in currency takings over last year to cover preference charges, and a further increase of 9 per cent. to cover one per cent. on the ordinary stock. Actually to date there was already a small improvement on last year's figures.

Many shareholders might be anxious as to the outcome of the trade agreement now under negotiation between Argentina and the United Kingdom, for so many interests were concerned in its possible terms and understandings. The three-year agreement now in force had only three days to run before termination, and there were still points that remained unsettled. It was possible that there might be a short extension of time in order that the contracting parties might reach an agreement, as they hoped would be the case, on a basis which would serve to maintain the trade and good credit which on general average had ruled for a century and more between Argentina and the United Kingdom.

A message received from the General Manager reported favourably regarding crops and livestock prospects, and stated that in general the outlook was considerably brighter than at the same date last year.

The report and accounts were unanimously adopted.

Forthcoming Meetings

Nov. 9 (*Mon.*)—**Central Uruguay Railway Co. of Monte Video Limited** (Ordinary General), River Plate House, Finsbury Circus, E.C.2, at 2.30 p.m.

Nov. 10 (*Tues.*)—**Argentine Great Western Railway Co. Ltd.** (Ordinary General), Winchester House, Old Broad Street, E.C., at 11 a.m.

Nov. 10 (*Tues.*)—**Bengal Dooars Railway Co. Ltd.** (Ordinary General), Gresham House, Old Broad Street, E.C.2, at 2.45 p.m.

Nov. 11 (*Wed.*)—**Cordoba Central Railway Co. Ltd.** (Ordinary General), River Plate House, Finsbury Circus, E.C.2, at 2.30 p.m.

Nov. 12 (*Thurs.*)—**Bengal-Nagpur Railway Co. Ltd.** (Ordinary General), 132, Gresham House, Old Broad Street, E.C., at 12 noon.

Nov. 12 (*Thurs.*)—**Central Argentine Railway Limited** (Ordinary General), River Plate House, Finsbury Circus, E.C., at 2.15 p.m.

NOTES AND NEWS

Manchester-Sheffield Electrification, L.N.E.R.—The directors of the L.N.E.R. have now approved details of the scheme for the electrification of the Manchester–Sheffield main line to a total of 74½ miles, or 293 track miles.

Institution of Railway Signal Engineers' Annual Dinner.—We much regret that in our account of the Institution of Railway Signal Engineers' annual dinner, on page 713, in last week's issue, the name of Mr. J. Punter did not appear; he was the only past-President present who was not mentioned.

Sir Robert Horne and British Railway Stockholders.—Sir Robert Horne, Chairman of the Great Western Railway, will address the members of the British Railway Stockholders' Union at a luncheon at Gatti's Restaurant, Strand, on Wednesday next, November 11. Applications for seats should be addressed to the Secretary of the Union, 25, Victoria Street, S.W.1.

New Industrial Light Railway at Scunthorpe.—*The Financial Times* states that, in order to economise in transport costs, John Lysaght Limited, which owns the Normanby Park Steel works at Scunthorpe, has begun building a light railway from the works to Flixborough on the River Trent, where it is proposed to construct a modern wharf to accommodate two steamers with a cargo capacity of 16,000 tons.

New Locomotives for the L.N.E.R.—The L.N.E.R. has announced that it proposes to build 121 new locomotives during 1937. Included in this number are 14 streamline Pacific engines of the "Silver Link" class which are responsible for hauling the Silver Jubilee train. A further 11 engines of the "Green Arrow" mixed traffic type are also to be built, together with 32 locomotives of the "Sandringham" 4-6-0 express passenger type for service on main line and secondary passenger trains; 38 six-coupled freight locomotives, together with 20 tank engines of the 2-6-2 type and six shunting engines, make up the total.

Canadian Pacific Earnings—Gross earnings of the Canadian Pacific Railway for the month of September, 1936, amounted to $14,312,000, an increase of $866,000 in comparison with September, 1935. In the working expenses of $10,889,000 there was an increase of $733,000, leaving net earnings $133,000 higher, at $3,423,000. Aggregate gross earnings for the first nine months of 1936 were $99,943,000, an increase of $7,903,000, and the net earnings of $11,828,000 were higher by $441,000.

Canadian National Earnings.—For the month of September, 1936, gross earnings of the Canadian National Railways amounted to $17,956,964, an increase of $2,057,285 in comparison with September, 1935. Operating expenses ($14,994,327) advanced by $1,385,879 to leave net earnings of $2,962,637, which were $671,406 higher than for September, 1935. Aggregate gross earnings from January 1 to September 30, 1936, were $134,448,312, an improvement of $9,349,237, and the net earnings for the nine months were $70,901 higher, at $6,205,461.

Berlin Tunnel Trial.—Three of the five men accused in connection with the Berlin Nord-Sud underground railway tunnel collapse in which 19 workmen lost their lives in August, 1935, have been found guilty of manslaughter. Herr Weyher, a railway official, was sentenced to three years' imprisonment; the manager of the contracting firm (the Berlin Construction Company) was sentenced to 27 months; and Herr Moth, a supervising engineer, to 19 months.

Proposed New Swiss Funicular Railway.—The municipality of Langwies, near Davos, has granted permission for the construction of a cable railway from the top of the Parsenn ski-run to the summit of the Weissfluh (9,344 ft.). This will form an extension to the Davos–Parsenn Funicular Railway, opened in 1931, which provides access from the popular winter sports resort to the ski-ing grounds of the Weissflujoch. It was described in THE RAILWAY GAZETTE of December 25, 1931.

G.W.R. Camp Coaches for the Coronation.—The G.W.R. has arranged to concentrate a number of its camp coaches at Henley-on-Thames and Wargrave during Coronation week. Each coach will be fully furnished and equipped for eight persons and will be available for hire at the rate of £8 for the week—equivalent to £1 a person. These coaches will serve not only as a residence for parties wishing to visit London during Coronation week, but also afford ideal sites for spending a holiday on the Thames or exploring Windsor or other interesting places in the neighbourhood.

Northern Ireland Traffics.—Passenger receipts for the first seven months of 1936 on railways wholly in Northern Ireland amounted to £164,501, against £153,903 for the corresponding period of 1935, with an improvement from 3,313,926 to 3,414,135 in the number of passengers carried. Merchandise and mineral tonnage for the seven months advanced from 319,247 tons to 368,797 tons, and the total receipts from goods traffic from £106,465 to £135,556. Railways partly in Northern Ireland carried 3,232,433 passengers in the first seven months of 1936, against 3,339,589 in the first seven months of 1935, but passenger receipts improved from £244,162 to £251,408. The quantity of merchandise and minerals carried was 559,611 tons, against 570,060 tons, but the total receipts from goods traffic increased from £356,841 to £369,898. The number of livestock carried was 416,196, against 417,077.

Railway Freight Rebates Scheme.—As will be seen from the legal notice published on page 773 the Railway Rates Tribunal will sit at 10.30 a.m. on Monday, November 23, in London to review the operation of the Railway Freight Rebates Scheme for the year ending September 30, 1936. The railway companies have filed an application that in respect of the year October 1, 1936, to September 30, 1937, the sum to be paid out of the general moneys of the Freight Rebates Fund in respect of administrative expenses shall be increased from one-half of 1 per cent. to such other percentage as will yield £43,000.

Non-Transferable Tickets.—A King's Bench Divisional Court decided on October 27 that a by-law of the L.M.S.R. which was intended to prohibit the sale of non-transferable tickets by anyone not duly authorised and their purchase from anyone not authorised was not *ultra vires*. A passenger had bought a cheap excursion ticket from Manchester to Euston and at Euston handed the return half to another. At subsequent police court proceedings against both men the magistrate had found fraud proved, but had declined to convict on the ground that the by-law was void as being too wide. On appeal, the Divisional Court was not prepared to agree with the magistrate.

Southern Railway Valuation for 1936-1941.—The Railway Assessment Authority announces that as the result of discussions with the Southern Railway Company the figure of £1,150,000 will be inserted in the draft of the second railway valuation roll as the net annual value of the company's undertaking for the quinquennial period 1936-1941. The net annual value of the undertaking for the first quinquennial period was determined by the Court at £1,077,131 and the Railway Assessment Authority on September 24 last "revised" the first railway valuation roll relating to the Southern Railway to give effect to that decision, so that the local authorities are now in a position to alter the existing valuation lists with retrospective effect, for rating purposes, from April, 1931, to April 1936.

L.M.S. Accommodation for Northants Steel Boom.—Important extensions of siding accommodation and operating equipment are to be carried out by the L.M.S.R. at Weldon and Corby, near Kettering (Northants), in order to cope with the rapidly increasing traffic of the steelworks there. A new yard which will be capable of holding 1,960 railway wagons is being laid down between Weldon and Corby and Geddington stations, solely for the accommodation of traffic to and from Stewarts and Lloyds' steelworks and associated undertakings at Corby. Large new

signal boxes are also being built both at Weldon North and Weldon South, and the improvements will involve considerable excavation and levelling of ground. Whereas in 1933, before the enlargement of the Corby steelworks, the sidings accommodated only 363 wagons and the number of wagons dealt with daily was only 350, the sidings have already been enlarged to hold 737 wagons, while 1,100 wagons are now being worked to or from the steelworks every day.

L.N.E.R. Line to be Doubled.—The L.N.E.R. announces that a section of line six miles long between Soham and Snailwell junction, Newmarket, which is at present single track, is to be doubled. This line forms part of the route used by the Harwich Continental express trains to and from York and Liverpool, and by other important services between Lancashire and Yorkshire and the Eastern Counties. It is expected that when the line is doubled the running time of passenger trains over the section will be reduced by two minutes and the running time of freight trains will be reduced by four minutes; improved and speedier transit will also be given to the increasing green pea and other perishable traffic from the Ipswich and Colchester areas to the Northern Counties. In addition to the doubling of the line, improvements are to be made at Fordham, an intermediate station, including a new reception goods line and improved lighting.

Road Accidents.—The Ministry of Transport return for the week ended October 31 of persons killed or injured in road accidents is as follows. The figures in brackets are those for the corresponding period of last year :—

	Killed, including deaths resulting from previous accidents		Injured	
England ..	142	(134)	4,010	(4,101)
Wales	4	(7)	157	(142)
Scotland ..	8	(15)	364	(352)
	154	(156)	4,531	(4,595)

The total fatalities for the previous week were 152, compared with 122 for the corresponding period of last year.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 44th Week			Totals to Date		
	1936	1935	Inc. or Dec.	1936	1935	Inc. or Dec.
	£	£	£	£	£	£
L.M.S.R. (6,916½ mls.)						
Passenger-train traffic...	433,000	402,000	+ 31,000	22,235,000	21,695,000	+ 540,000
Merchandise, &c. ...	508,000	485,000	+ 23,000	20,978,000	19,803,000	+1,175,000
Coal and coke ...	239,000	252,000	− 13,000	10,464,000	10,041,000	+ 423,000
Goods-train traffic ...	747,000	737,000	+ 10,000	31,442,000	29,844,000	+1,598,000
Total receipts	1,180,000	1,139,000	+ 41,000	53,677,000	51,539,000	+2,138,000
L.N.E.R. (6,332 mls.)						
Passenger-train traffic...	287,000	273,000	+ 14,000	14,441,000	14,141,000	+ 300,000
Merchandise, &c. ...	389,000	386,000	+ 3,000	14,261,000	13,767,000	+ 494,000
Coal and coke ...	253,000	250,000	+ 3,000	10,166,000	9,713,000	+ 453,000
Goods-train traffic ...	642,000	636,000	+ 6,000	24,427,000	23,480,000	+ 947,000
Total receipts	929,000	909,000	+ 20,000	38,868,000	37,621,000	+1,247,000
G.W.R. (3,746½ mls.)						
Passenger-train traffic...	177,000	167,000	+ 10,000	9,374,000	9,207,000	+ 167,000
Merchandise, &c. ...	207,000	198,000	+ 9,000	8,380,000	8,040,000	+ 340,000
Coal and coke ...	101,000	114,000	− 13,000	4,391,000	4,323,000	+ 68,000
Goods-train traffic ...	308,000	312,000	− 4,000	12,771,000	12,363,000	+ 408,000
Total receipts	485,000	479,000	+ 6,000	22,145,000	21,570,000	+ 575,000
S.R. (2,153 mls.)						
Passenger-train traffic...	274,000	258,000	+ 16,000	13,729,000	13,471,000	+ 258,000
Merchandise, &c. ...	75,000	69,500	+ 5,500	2,772,000	2,726,000	+ 46,000
Coal and coke ...	37,000	37,500	− 500	1,353,000	1,301,000	+ 52,000
Goods-train traffic ...	112,000	107,000	+ 5,000	4,125,000	4,027,000	+ 98,000
Total receipts	386,000	365,000	+ 21,000	17,854,000	17,498,000	+ 356,000
Liverpool Overhead ... (6½ mls.)	1,209	1,098	+ 111	52,670	52,144	+ 526
Mersey (4½ mls.) ...	4,375	4,161	+ 214	178,679	176,290	+ 2,389
*London Passenger Transport Board ...	562,500	550,000	+ 12,500	10,075,000	9,778,300	+ 296,700
IRELAND						
Belfast & C.D. pass. (80 mls.)	1,703	1,891	− 188	115,594	114,199	+ 1,395
,, ,, goods	607	645	− 38	23,601	22,261	+ 1,340
,, ,, total	2,310	2,536	− 226	139,195	136,460	+ 2,735
†Great Northern pass. (543 mls.)	8,150	9,150	− 1,000	479,200	460,000	+ 19,200
,, ,, goods	11,750	12,650	− 900	415,650	412,850	+ 2,800
,, ,, total	19,900	21,800	− 1,900	894,850	872,850	+ 22,000
†Great Southern pass. (2,067 mls.)	31,921	32,152	− 231	1,591,883	1,543,513	+ 48,370
,, ,, goods	49,994	49,663	+ 331	1,803,125	1,687,710	+ 115,415
,, ,, total	81,915	81,815	+ 100	3,395,008	3,231,223	+ 163,785

* 18th week. † 43rd week.

British and Irish Railways Stocks and Shares

Stocks	Highest 1935	Lowest 1935	Prices Nov. 4, 1936	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	55½	44½	59¾	+1
5% Con. Prefce ...	124	108	125	—
5% Red.Pref.(1950)	117	106¾	110½	—
4% Deb.	118½	108	116	−1
4½% Deb. ...	122	110	119½	−1
4½% Deb. ...	129½	118	127½	—
5% Deb.	140¼	130	138½	—
2½% Deb. ...	82¼	68½	76½	—
5% Rt. Charge ...	137	128	135½	—
5% Cons. Guar. ...	136¾	120½	133½	—
L.M.S.R.				
Ord.	25 5/16	16	32	+1½
4% Prefce. (1923)	58¼	43½	79½	+½
4% Prefce. ...	87½	73½	90½	+½
5% Red.Pref.(1955)	107	97¾	108½	—
4% Deb.	110¼	99½	110½	—
5% Red.Deb.(1952)	119 11/16	111 5/16	115½	—
4% Guar. ...	105⅝	95½	105½	—
L.N.E.R.				
5% Pref. Ord. ...	15⅞	8¼	12¾	+¾
Def. Ord. ...	7 9/16	4¾	6⅜	+⅛
4% First Prefce.	74¾	48	78	—
4% Second Prefce.	31¾	16¼	30	—
5% Red.Pref.(1955)	92¼	71	99	+1
4% First Guar. ...	103 11/16	93	102	−½
4% Second Guar.	98¾	82½	98	−½
3% Deb.	86	75	84	—
4% Deb.	109¼	98½	108½	—
5% Red.Deb.(1947)	118¼	106½	112½	—
4½% Sinking Fund Red. Deb.	112½	108	110½	—
SOUTHERN				
Pref. Ord. ...	87½	69¾	97	—
Def. Ord. ...	25 13/16	16¾	26	—
5% Prefce. ...	124	108¼	125	—
5% Red.Pref.(1964)	117¾	109½	117½	—
5% Guar. Prefce.	136½	121½	133½	—
5% Red.Guar.Pref. (1957)	121¼	112½	117½	—
4% Deb.	116¾	107	114½	−½
5% Deb.	138	130¼	137½	—
4% Red. Deb. 1962–67	115	106½	112½	—
BELFAST & C.D.				
Ord.	9	4	4½	—
FORTH BRIDGE				
4% Deb.	111¼	104¼	105½	—
4% Guar. ...	109⅞	104	105½	—
G. NORTHERN (IRELAND)				
Ord.	20	7	12	−1
G. SOUTHERN (IRELAND)				
Ord.	57½	14½	54	—
Prefce.	50	25¼	60½	—
Guar.	88¾	51¼	90	+1
Deb.	86¼	70	97	—
L.P.T.B.				
4½% "A" ...	130	119¾	126½	—
5% "A" ...	139¾	130	136½	—
4½% "T.F.A." ...	113¾	108	111	—
5% "B" ...	131½	122¾	129½	—
"C"	109½	91	98	−3
MERSEY				
Ord.	23⅛	9¼	37	−1
4% Perp. Deb. ...	100½	93½	100	—
3% Perp. Deb. ...	75½	67	76½	—
3% Perp. Prefce.	62	47¼	67½	—

XUM

CONTRACTS AND TENDERS

Walker Bros. (Wigan) Limited has received orders for diesel railcars from the Peruvian Corporation and for diesel power bogies from the Great Northern Railway (Ireland). Details are given in a news article on page 766.

R. Y. Pickering & Co. Ltd. has received an order from John Hudson & Co. Ltd. for 100 12-ton coal wagons.

Clifton & Baird Limited has received an order from the Egyptian State Railways Administration for one heavy-duty high-speed cold sawing machine at a total price of £583.

The Gloucester Railway Carriage & Wagon Co. Ltd. has received an order from the National Benzol Co. Ltd. for 14 Class "A" 14-ton tank wagons for the conveyance of inflammable liquids and not for 60 wagons as was recorded in error in this column last week.

The Egyptian State Railways Administration has placed orders for weighing machines (Ref. No. E.S.R. 55/203) as follow :—

Etab. Duchesne & Cie, Item No. 1, total cost £240, delivered f.o.b. Marseilles or Antwerp.

Henry Pooley & Son Ltd., Items Nos. 2, 3 and 4, total cost £622 10s. delivered f.o.b. U.K. port.

The Bengal-Nagpur Railway Administration has placed the following orders :—

Blaenavon Co. Ltd., 1,500 carriage and wagon tyres.

John Baker & Bessemer Limited, 500 carriage and wagon tyres.

Brown Bayley's Steel Works Limited, 50 axles.

Metropolitan-Cammell Carriage & Wagon Co. Ltd., 400 cast steel buffer cases.

The directors of the Great Western Railway have authorised placing the following contracts :—

General Railway Signal Co. Ltd. : Installation of signal cables, relays, and interlocking at the Arrival signal box, Paddington station.

E. Jordan & Son : Construction of a retaining wall and stables at the Hockley goods yard and construction of subway, platform roof coverings, retaining walls, and other works in connection with the reconstruction of Leamington station.

Walker Bros. Ltd. : Extension of the goods shed at Greenford.

The Turnerised Roofing Co. (Gt. Britain) Ltd. : Waterproofing of the up platform covering and of the goods shed at Llantrisant ; also of the wagon repairing depot roof at Pontypool Road, and repairs to the roof of high level goods shed at Aberdare.

Duke & Ockenden Limited : Sinking of four boreholes between Seaton and Looe.

The Patent Shaft & Axletree Co. Ltd. : Supply of steelwork for the reconstruction of the viaduct at Keyham.

Willoughby (Plymouth) Limited : Repairs to the inner pair of entrance gates at Plymouth Docks.

The East Ferry Road Engineering Works Company : Supply and fitting of luffing gear to eight hydraulic cranes at Port Talbot docks.

Caffin & Co. Ltd. : Reconstruction in reinforced concrete of part of Talbot wharf at Port Talbot docks.

Taylor & Hubbard Limited : Supply and erection of three electric 2-ton jib cranes at Hockley Basin shed, Birmingham.

Stothert & Pitt Ltd. : Supply and erection of two 3-ton portable steam cranes at Dunball wharf, and one 3-ton portable steam crane at Bridgwater dock.

For the Swindon Works : Holman Bros. Ltd. : Supply of a portable two-stage air compressor.

H. Broadbent Limited : Supply of a tube turning and screwing machine.

L.M.S.R. Contracts for Wirral Electrification Scheme

The L.M.S.R. announces that in connection with the electrification of the Wirral lines from Birkenhead Park to West Kirby and New Brighton, further important orders for sub-station and track equipment and for power transmission lines have been placed with British manufacturers as follow :—

Sub-station equipment

Hewittic Electric Company, Glass bulb rectifiers.

Crompton Parkinson Limited, E.H.T. switchgear.

British Thomson-Houston Company, D.C. switchgear.

Automatic Telephone & Electric Co. Ltd., Remote control apparatus.

J. L. Eve Construction Company, Power transmission lines.

Track equipment

Lancashire Steel Corporation, Conductor rails.

Bullers Limited, Conductor rail insulators.

British Insulated Cables Limited, Conductor rail and running rail bonds.

Alfred Herbert (India) Limited has received the following orders for machine tools from the Indian Stores Department :—

Two 8½-in. centre × 8 ft., one 12 in. centre × 15 ft. and two 6½-in. centre × 6 ft. high speed, sliding surfacing and screw cutting gap bed lathes.

One 20-in. stroke high speed heavy duty single head traversing shaping machine.

One Pels punching, shearing and cropping machine.

One Edgwick sawing and filing machine.

One crack detector, wound for 220–230 volts, single phase, 50 cycle a.c.

The Associated British Machine Tool Makers Limited has received orders from the Indian Stores Department for the following machine tools :—

One Lang's 17½ in. centre × 14 ft. gap bed sliding, surfacing and screw cutting lathe.

One Lang's Olympia model 12-in. swing 6-in. centre × 6 ft. gap bed lathe.

Two Ward's No. 7 Capstan lathes.

One Butler's 18-in. stroke general purpose crank shaper.

One Butler's 12-in. stroke high production slotting machine.

One Butler's 14-in. stroke, high production slotting machine.

The Wellman Smith Owen Engineering Corporation has been awarded a contract by the Cleveland Bridge & Engineering Co. Ltd. for the supply of two bridge erection cranes of the creeper type to be employed in the erection of the cantilever bridge to be built over the Hooghly River between Howrah and Calcutta. Each crane will be fitted with two jibs, each capable of dealing with 60-ton loads. Auxiliary lifts for loads up to 20 tons are also provided for. It is understood that this is the first occasion on which cranes of this type and capacity have been employed in the erection of bridges of the cantilever type, the design of the cranes calling for the introduction of many interesting and novel features and involving the supply of considerably more than 1,000 tons of machinery. It will be recalled that the Wellman Smith Owen Engineering Corporation were the suppliers of the creeper cranes of 120-tons capacity used by Dorman Long & Co. Ltd. in connection with the erection of Sydney Harbour bridge.

Thomas Burnett & Co. Ltd. has received an order from John Hudson & Co. Ltd. for 50 12-ton coal wagons.

Ransomes & Rapier Limited has received an order from the Southern Railway for two 36-ton steam travelling breakdown cranes, fitted with Stokes relieving bogies.

The English Electric Co. Ltd. has received an order from the Egyptian State Railways Administration for a static transformer welding plant.

Brown Bayleys Steelworks Limited has received an order from the Assam-Bengal Railway, to the inspection of Messrs. Rendel, Palmer & Tritton, for 72 locomotive tyres.

Metropolitan-Cammell Carriage & Wagon Co. Ltd. has received an order from the Chinese Government Purchasing Commission for draft gear to be supplied to the inspection of Messrs. Fox & Mayo.

The Algerian State Railways are reported to be enquiring for 129,000 tons of Welsh large steam coal and 30,000 tons of patent fuel.

Tenders are invited, receivable by the Secretary, Stores Purchase Committee, Government of Mysore, Bangalore, by November 16, for the supply of permanent way materials required for the Mysore Railways during the year 1936–7.

Tenders are invited by the Bombay, Baroda & Central India Railway, receivable at The White Mansion, 91, Petty France, Westminster, S.W.1, by November 13, for the supply of carriage and wagon axles and helical and volute springs.

The Agent, East Indian Railway, 105, Clive Street, Calcutta, has invited tenders receivable by November 11 for the supply of fittings and materials for the construction of 68-ft. broad-gauge bogie underframes at Tatanagar during 1937-8, and including steel castings, rubber springs and fittings, split pins, vacuum brake fittings, buffers, teak-wood, and bolts and nuts.

The Superintendent of Stores, Assam-Bengal Railway, Pahartali, invites tenders receivable by November 12 for the supply during the 12 months from April 1, 1937, to March 31, 1938, of miscellaneous stores including permanent way materials, carriage and engine fittings, imitation leather, vacuum brake fittings, fencing materials, signal fittings, electrical materials, leather and leather goods, sulphuric acid, asbestos packing, locks, cotton waste, bolts and nuts, rivets, screws, methylated spirit, kerosene and lubricating oils, mantles, drills, saws, lamp fittings, tallow, grease and other miscellaneous stores.

LEGAL AND OFFICIAL NOTICES

In the Court of the Railway Rates Tribunal.

Road and Rail Traffic Act, 1933

Agreed Charges

NOTICE IS HEREBY GIVEN that Applications for the approval of Agreed Charges under the provisions of Section 37 of the Road and Rail Traffic Act, 1933, short particulars of which are set out in the Schedule hereto, have been lodged with the Railway Rates Tribunal.

The Procedure to be followed in regard to the inspection of the said Applications and the filing of Notices of Objections is that published in the "London Gazette" of 28th July, 1936.

Printed copies of the Procedure can be obtained from the Office of the Tribunal, Bush House, Aldwych, London, W.C.2.

Notices of Objection to any of the said Applications must be filed on or before the 27th day of November, 1936.

A copy of each Application can be obtained from Mr. G. Cole Deacon, Secretary, Rates and Charges Committee, 35, Parliament Street, Westminster, London, S.W.1, price 1s. post free.

T. J. D. ATKINSON,
Registrar.

4th November, 1936.

Number of Application	Name of Trader and General Description of Traffic
1936—No. 501	R. M. JONES, 11, Palace Street, Caernarvon; Live Pigs.
1936—No. 502	THE ORIENTAL FIBRE MAT & MATTING COMPANY, Vorda Works, Highworth, Wilts; Carpeting, Rugs, Mats, Matting and Oilcloth.
1936—No. 505	ARTHUR SHAW & CO. LTD., Willenhall, Staffs; Hardware, Cast-iron Figures and Ornaments, Tent Pegs, &c.
1936—No. 506	THE SHAW FOUNDRY CO. LTD., Willenhall, Staffs; Castings, Hardware, Mattresses, Bedstead Fittings, &c.
1936—No. 507	BRAMFORD'S CHRISTMAS CLUB LIMITED, Bramford House, Kingswood, Bristol; Confectionery, Toys, Tobacco, Household Requisites, Leather and Fancy Goods, Cutlery.
1936—No. 508	BOULTON & PAUL LIMITED, Riverside, Norwich; Horticultural and Poultry Houses, Incubators, Builders' Implements, &c.
1936—No. 509	THOMAS RATCLIFFE & CO. LTD., Albert Mills, Mytholmroyd; Blankets.
1936—No. 510	R. SOMMERVILLE & CO. LTD., Creech Paper Mills, near Taunton; Paper.
1936—No. 511	KOPPENHAGENS, 9 and 10, Gt. Tower Street, London, E.C.3; Wines and Spirits, Confectionery.
1936—No. 512	GEORGE NELSON, DALE & CO. LTD., Warwick; Gelatine, Gelatine Glue, Adhesive Pastes, &c.
1936—No. 513	GRANT & ARMSTRONG LIMITED, Bath Lane, Newcastle-on-Tyne, 4; Paper and School Requisites.
1936—No. 514	GEORGE DOBIE & SON LTD., Four Square Works, Paisley; Cigarettes, Manufactured Tobacco, &c.
1936—No. 515	L. & C. MOSS, Cannel Street, Manchester, 4; Clothing, Drapery and General Stores Wares, &c.
1936—No. 516	J. A. SHARWOOD & CO. LTD., Offley Works, Offley Road, London, S.W.9; Preserves, Groceries, Confectionery, Fancy Goods, Gelatine, Olive Oil, &c. (*Applicable also to traffic consigned by one Associated or Subsidiary Company*).
1936—No. 517	RECKITT & SONS LTD., Hull; Polishes, Stains, Dressings, Grocery Articles, Bath Salts, Cleansing Powders, Disinfectants, Dry Colours, Dyes, Insecticides, Enamels, Hardware, Toilet Paper, &c.
1936—No. 518	REX ARNOT & CO. LTD., 1A, Blythswood Square, Glasgow, C.2; Butane Gas.
1936—No. 519	BRIGGS & CO., 16 to 28, York Street, Leicester; Boots and Shoes, Hosiery, Woollen Goods, Clothing, Toys, Polishes, Stains and Dressings, Brushes, Shop Fittings, &c.
1936—No. 520	SCOTT & BOWNE LIMITED, 10 and 11, Stonecutter Street, London' E.C.4; Emulsion, Cod Liver Oil, Cod Liver Oil and Malt, Druggists' Sundries, Cosmetics, &c.
1936—No. 521	THE EMU WINE CO. LTD., Emu House, St. Leonards Street, Bromley-by-Bow, London, E.3; Wines, &c.
1936—No. 522	WALSH & CO. (BRISTOL) LTD., Quay Street, Bristol; Clothing. (*Applicable also to traffic consigned by one Associated or Subsidiary Company*).
1936—No. 523	MATLOCK & BROWN LIMITED, Market Street, Kettering; Clothing.
1936—No. 524	DAVID LITTLE & CO. LTD., 30, Park Place, Leeds; Clothing.
1936—No. 525	HOVIS LIMITED, Macclesfield; Baskets, Baking Tins, &c.
1936—No. 526	TRIUMPH ENGINEERING CO. LTD., Dale Street, Coventry; Motor Bicycles.
1936—No. 527	WOLSEY LIMITED, King Street, Leicester; Hosiery, &c.
1936—No. 528	MALGA (LONDON) LIMITED, Southall, Middlesex; Bakers' Filling Cream.
1936—No. 529	FREEMANS, 103/109, Lavender Hill, S.W.11; Clothing, Drapery and General Stores Wares.
1936—No. 530	GRAINGER & SMITH LIMITED, Dudley; Clothing, Drapery, Outfitting, &c. (*Applicable also to traffic consigned by five Associated or Subsidiary Companies*).
1936—No. 531	PALETHORPES LIMITED, Tipton; Sausages, Cooked Meats, &c.
1936—No. 532	DIAMOND SUPPLY CO. LTD., Diamond House, Waldegrave Road, Teddington, Middlesex; General Stores Wares.
1936—No. 533	DUSMO CO. LTD., Angel Road, Edmonton, London, N.18; Sanitary Sweeping Powders, Disinfecting Fluids, Brooms and Brushes.
1936—No. 534	JOHN KAY LIMITED, Doreth House, Cowper Street, London, E.C.2; Groceries, Preserves and Provisions, Cleansing Powders, Manufactured Tobacco, Matches, Razor Blades, Salines, &c.
1936—No. 535	KELLOGG COMPANY OF GREAT BRITAIN LIMITED, Bush House, Aldwych, London, W.C.2; Foods prepared from Cereals.
1936—No. 536	ALFRED COHEN & SON, Argyle Works, 241-247, Bow Road, London, E.3; Clothing.
1936—No. 537	HARRODS LIMITED, Knightsbridge, London, S.W.1; Clothing, Drapery and General Stores Wares.
1936—No. 538	GEORGE DOBIE & SON LTD., Four Square Works, Paisley; Tobacco, &c.
1936—No. 539	R. S. NORRISH & SONS LTD., Sampford Peverell; Butter and Cream.
1936—No. 540	SAXONE SHOE CO. LTD., Kilmarnock; Boots, Shoes, Laces and Hosiery.

In the Court of the Railway Rates Tribunal.

Local Government Act, 1929

ELEVENTH SCHEDULE.

1936 REVIEW OF THE OPERATION OF THE RAILWAY FREIGHT REBATES SCHEME AND APPLICATION IN RESPECT OF ADMINISTRATIVE EXPENSES.

NOTICE IS HEREBY GIVEN that the Railway Rates Tribunal will sit at 10.30 a.m. on Monday, the 23rd November, 1936, in Court "A," Judges' Quadrangle, Royal Courts of Justice, London, W.C.2, to review the operation of the Railway Freight Rebates Scheme for the year ending 30th September, 1936, pursuant to the provisions of Part 1 of the Eleventh Schedule to the Local Government Act, 1929.

NOTICE IS ALSO GIVEN that the Railway Companies to which the said Scheme applies have filed with the Tribunal an Application (1936 No. 504) pursuant to the provisions of sub-paragraph 1 (*a*) of paragraph 5 of the said Part 1 of the Eleventh Schedule that in respect of the year 1st October, 1936, to 30th September, 1937, the sum to be paid out of the general monies of the Railway Freight Rebates Fund in respect of administrative expenses shall be increased from one-half of one per cent. to such other percentage of the aggregate of the estimated rate relief of the said Companies in that year as will yield a sum amounting to approximately £43,000, or, alternatively, to such other appropriate percentage as may be requisite to meet the situation; which Application will also be heard at the above-mentioned time and place.

NOTICE IS FURTHER GIVEN that Accounts and Statements relative to such Review have been lodged with the Tribunal. Such Accounts and Statements and the aforesaid Application may be inspected at the Office of the Registrar, Bush House, Aldwych, London, W.C.2, at any time during office hours. Copies of the said Accounts and Statements may be obtained (price 2s. 6d. post free) on prepayment, from the Secretary, the Railway Clearing House, Euston Square, London, N.W.1.

Any Railway Company to which the said Scheme applies or Representative Body of Traders interested, which may be desirous of being heard before the Tribunal on the Review must file a Notice of such desire, and any person desiring to object to the aforesaid Application must file a separate Notice of Objection at the Office of the Registrar, Bush House, Aldwych, London, W.C.2, on or before Monday, the 16th day of November, 1936.

Such Notices must be on foolscap size paper and must state concisely the Submission (if any) which is desired to be made, and in the case of an Objection, the nature and grounds thereof. A Notice by a Representative Body of Traders must in addition contain a statement of the facts upon which such Body claims to represent a substantial number of persons interested in any or all of the selected traffics.

Each Notice filed must be stamped with an adhesive fee stamp for 2s. 6d. (which can be purchased at the office of the Tribunal only). If sent by post each Notice must be accompanied by a Postal Order for 2s. 6d. payable to the Registrar, Railway Rates Tribunal, when a stamp will be affixed at the office. Six additional copies of each Notice must be lodged with the original at the office of the Registrar.

Dated this 29th day of October, 1936.

T. J. D. ATKINSON,
Registrar.

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

Exports of Railway Material from the U.K. in Sept.

	Sept., 1936	Sept., 1935	Nine Months Ending Sept., 1936	Nine Months Ending Sept., 1935
	£	£	£	£
Locomotives, rail	41,756	59,253	1,053,998	527,404
Carriages and wagons	59,069	89,307	779,610	875,883
Rails, steel	37,966	92,719	946,620	656,629
Wheels, sleepers, fishplates and miscellaneous materials	123,970	172,735	1,112,547	1,420,784

Locomotive and rail exports included the following:—

	Locomotives		Rails	
	Sept., 1936	Sept., 1935	Sept., 1936	Sept., 1935
	£	£	£	£
Argentina	—	—	2,428	5,642
Union of South Africa	—*	—	37,876	61,214
British India	—	27,584	10,083	62,882

* Figures not available

Railway Share Market

Although at first sight it may appear that the increased traffics of the main line railways for the past week are not particularly encouraging, the figures are good if it is remembered that at this period last year there was an unusually large movement of coal owing to the threat of a coal strike. The response shown by the junior stocks to the traffics indicated that this point is generally recognised and also reflects the belief that the returns are likely to continue to be of a favourable character.

Great Western ordinary was bought on anticipations that traffic increases may very well be accelerated before long, and the stock was active around 60. The gain in receipts for the past week was only £6,000. The L.M.S.R. traffic rise was again the largest at £41,000. The ordinary stock, which changed hands at over 32, is now quoted at 31⅞ "middle," while both the 4 per cent. and 1923 preference stocks were firm on the attractive yields offered. Southern preferred at 97½ and the deferred at 26 were steady on satisfaction with the traffic rise of £21,000 for the past week and continued to benefit from the belief that, owing to expanding tourist traffic, larger increases are likely as time proceeds. There is, however, still considerable uncertainty as to whether the deferred stock will re-enter the dividend list for 1936 and at best not more than ¼ per cent. is considered likely. It is realised that, bearing in mind the statements at the last meeting, the intention is to reward stockholders for their patience at the earliest opportunity, and consequently it is assumed that if at all possible a payment will be made for the current year. L.N.E.R. issues were again relatively dull, the traffic gain of £20,000 being rather disappointing. Nevertheless, there continues to be a good deal of confidence that the first preference stock will receive its full dividend. London Transport "C" was reactionary on the very cautious nature of the statements in the annual report, but later the lower price brought in buyers. Nevertheless, there has been a sharp decline on the week, the price now being 98. The market is taking a pessimistic view of the more immediate dividend outlook and there are fairly widespread fears that an increased payment is unlikely for the current year.

Among foreign railway stocks those of the Argentine companies showed a firmer trend and gains of a point were fairly general. B.A. Gt. Southern and Central Argentine issues were in favour and Cordoba Central debentures were also in request. Elsewhere, Antofagasta made a fractionally lower price. American railroad stocks fluctuated on the result of the Presidential election. Canadian Pacific made further improvement.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1935-36	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1935	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1935	Prices: Lowest 1935	Prices: Nov. 4, 1936	Yield % (See Note)
				£	£		£	£	£					
South & Central America.	Antofagasta (Chili) & Bolivia	834	1.11.36	14,800	+ 400	44	602,230	545,040	+ 57,190	Ord. Stk.	23	14 15/16	20 1/2	Nil
	Argentine North Eastern ..	753	31.10.36	9,029	+ 751	18	167,679	147,968	+ 19,711	,,	7	4	8	Nil
	Argentine Transandine ..	—	—	—	—	—	—	—	—	A. Deb.	49 1/2	30	50	8
	Bolivar	174	Sept., 1936	5,200	+ 200	39	57,700	55,300	+ 2,400	6 p.c. Deb.	13	5	7 1/2	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	14	11	16	3
	Buenos Ayres & Pacific ..	2,806	31.10.36	80,706	+ 1,388	18	1,339,046	1,324,601	+ 14,445	Ord. Stk.	101 1/2	47/8	111/2	Nil
	Buenos Ayres Central ..	190	17.10.36	$153,600	+ $50,600	16	$2,202,100	$2,020,400	+ $181,700	Mt. Deb.	21	10	30	Nil
	Buenos Ayres Gt. Southern	5,084	31.10.36	122,059	+ 4,961	18	1,971,255	2,148,903	— 177,648	Ord. Stk.	27	13 1/2	23	Nil
	Buenos Ayres Western ..	1,930	31.10.36	48,706	+ 12,396	18	715,643	700,562	+ 15,081	,,	24	10	19 1/2	Nil
	Central Argentine	3,700	31.10.36	142,851	+ 30,504	18	2,464,748	2,120,731	+ 344,017	,,	17 7/8	7	19	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	9	3 1/4	10	Nil
	Cent. Uruguay of M. Video	273	24.10.36	12,213	+ 3,255	17	185,679	145,265	+ 40,414	Ord. Stk.	81 1/2	3	5	Nil
	Do. Eastern Extn.	311	24.10.36	1,987	+ 679	17	28,764	22,838	+ 5,926	—	—	—	—	—
	Do. Northern Extn.	185	24.10.36	1,286	+ 320	17	23,021	18,264	+ 4,757	—	—	—	—	—
	Do. Western Extn...	211	24.10.36	1,130	+ 337	17	16,592	12,742	+ 3,850	—	—	—	—	—
	Cordoba Central	1,218	31.10.36	26,940	+ 30	18	589,260	559,130	+ 30,130	Ord. Inc.	4	1	2 1/2	Nil
	Costa Rica	188	31.8.36	17,130	+ 458	8	38,568	30,402	+ 8,166	Stk.	35	30	36	5 3/16
	Dorada	70	Sept., 1936	14,400	+ 2 200	39	126,600	105,500	+ 21,100	1 Mt. Db.	103 5/8	102 1/2	104 1/2	5 1/4
	Entre Rios	810	31.10.36	13,206	+ 2,372	18	224,843	211,943	+ 12,900	Ord. Stk.	15	6 1/2	11	Nil
	Great Western of Brazil ..	1,082	31.10.36	10,700	+ 1,100	44	332,100	330,300	+ 1,800	Ord. Sh.	1/2	5/16	1/4	Nil
	International of Cl. Amer.	794	Aug., 1936	$317,321	+ $12,980	35	$3,624,632	$3,265,010	+ $359,622	—	—	—	—	—
	Interoceanic of Mexico ..	—	—	—	—	—	—	—	—	1st Pref.	1/2	3/32	1/2	Nil
	La Guaira & Caracas ..	22¾	Oct., 1936	4,305	+ 1,405	43	45,850	37,885	+ 7,965	Stk.	8 1/2	8	5 1/2	Nil
	Leopoldina	1,918	31.10.36	24,708	+ 3,934	44	852,950	781,991	+ 70,959	Ord. Stk.	8 1/2	2 1/2	7 1/2	Nil
	Mexican	483	21.10.36	$261,900	+ $11,200	16	$4,127,800	$4,007,600	+ $120,200	,,	1 1/2	1/4	3/4	Nil
	Midland of Uruguay ..	319	Sept., 1936	7,673	+ 2,348	13	23,343	16,336	+ 7,007	,,	1 1/2	1 1/2	1/2	Nil
	Nitrate	397	31.10.36	4,102	— 5,005	44	101,887	126,964	— 25,077	Ord. Sh.	64/-	42/-	25/8	Nil
	Paraguay Central	274	24.10.36	$2,327,000	+ $418,900	17	$44,011,000	$36,953,000	+ $7,058,000	Pr. Li. Stk.	80 1/2	60	78 1/2	7 5/8
	Peruvian Corporation ..	1,059	Sept., 1936	85,485	+ 16,210	13	257,046	217,772	+ 39,274	Pref.	105/8	67 16/16	11	Nil
	Salvador	100	24.10.36	£9,397	— £5,303	17	£180,127	£204,221	— £24,094	Pr. Li.Db.	65	61	15	Nil
	San Paulo	153½	25 10.36	26,270	+ 3,017	43	1,269,513	1,053,073	+ 216,440	Ord. Stk.	80	35	84	3
	Taltal	164	Sept., 1936	2,605	— 1,700	13	8,755	9,250	— 495	Ord. Sh.	11 11/16	1 1/8	1 11/16	7 15/16
	United of Havana	1,353	31.10.36	15,791	+ 2,907	18	275,991	290,714	— 14,723	Ord. Stk.	3 1/16	1	2 1/2	Nil
	Uruguay Northern	73	Sept., 1936	897	+ 299	13	2,580	1,797	+ 783	Deb. Stk.	4 1/2	2 15/16	5 1/2	Nil
Canada.	Canadian National	23,613	21.10.36	863,802	+ 73,863	42	29,371,348	27,430,330	+ 1,941,018	—	—	—	—	—
	Canadian Northern ..	—	—	—	—	—	—	—	— 4 p.c.	Perp. Dbs.	78 5/8	52 1/2	73 1/2	5 7/16
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	103 5/8	93	102 1/2	3 7/8
	Canadian Pacific	17,220	31.10.36	930,800	+ 66,000	44	22,838,600	21,247,800	+ 1,590,800	Ord. Stk.	14 1/16	8 5/8	14	Nil
India.†	Assam Bengal	1,329	10.10.36	36,412	— 38	28	649,714	626,349	+ 23,365	Ord. Stk.	92 1/8	77 1/2	86 1/2	3 7/16
	Barsi Light	202	10.10.36	1,537	— 968	28	61,687	74,527	— 12,840	Ord. Sh.	105	77 1/2	68 1/2	7 5/16
	Bengal & North Western ..	2,112	10.10.36	67,433	+ 8,314	2	67,433	59,119	+ 8,314	Ord. Stk.	30 11/2	291	313	5 1/2
	Bengal Dooars & Extension	161	10.10.36	4,260	+ 97	28	68,668	70,092	— 1,424	,,	127 1/2	122	122 1/2	5 11/16
	Bengal-Nagpur	3,268	10.10.36	157,125	— 18,235	28	3,137,836	3,330,296	— 192,460	,,	105	100 5/16	102 1/2	3 7/8
	Bombay, Baroda & Cl. India	3,072	20.10.36	205,050	— 27,300	29	4,463,175	4,277,475	+ 185,700	,,	115 1/4	110	112 1/2	5 5/16
	Madras & Southern Mahratta	3,229	10.10.36	123,450	— 13,424	28	2,852,466	2,831,406	+ 21,060	,,	128 1/2	113 7/8	112 1/2	8
	Rohilkund & Kumaon ..	561	10.10.36	10,819	+ 686	2	10,819	10,133	+ 686	,,	294	262	311 1/2	5 1/8
	South Indian	2,532	10.10.36	112,404	— 3,057	28	2,142,290	2,148,716	— 6,426	,,	119 3/4	104 1/4	103 1/2	5 5/16
Various.	Beira-Umtali	204	Aug., 1936	73,900	+ 3,933	48	719,218	710,272	+ 8,946	—	—	—	—	—
	Bilbao River & Cantabrian	15	Sept., 1936	1,639	+ 478	40	13,631	13,358	+ 273	—	—	—	—	—
	Egyptian Delta	620	10.10.36	9,995	+ 176	28	119,568	111,419	+ 8,149	Prf. Sh.	2	15/8	1 3/4	5 11/16
	Great Southern of Spain ..	104	29.8.36	568	— 2,514	35	33,629	62,623	— 28,994	Inc. Deb.	3 1/2	2	3 1/2	Nil
	Kenya & Uganda	1,625	Sept., 1936	165,531	— 2,618	38	1,947,395	1,809,494	+ 137,901	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B.-Deb.	48	36	45 1/2	7 11/16
	Mashonaland	913	Aug., 1936	112,733	— 4,955	48	1,131,918	1,277,362	— 145,444	1 Mg. Db	104 1/4	100	102 1/2	4 7/8
	Midland of W. Australia ..	277	Sept., 1936	14,970	+ 820	13	36,835	37,203	— 368	Inc. Deb.	98 3/4	93	95	4 5/16
	Nigerian	1,905	12.9.36	35,899	+ 12,069	24	688,642	555,750	+ 132,892	—	—	—	—	—
	Rhodesia	1,538	Aug., 1936	207,304	+ 4,235	48	2 075,634	2,126,923	— 51,289	4 p.c. Db.	105 1/2	101	104 1/2 8	3 13/16
	South African	13,263	10.10.36	628,211	+ 61,001	27	16,579,473	15,302,566	+ 1,376,907	—	—	—	—	—
	Victoria	4,728	June, 1936	703,693	+ 16,855	52	9,689 925	9,421,092	+ 268,833	—	—	—	—	—
	Zafra & Huelva	112	Aug., 1936	1,438	— 10,664	35	59,281	88,575	— 29,294	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador and Paraguay Central receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rates of exchange and not on the par value.